

# Manufacturers Record



# Constructive Answer Needed

The time has gone for mincing words about conditions.

Business men of the South raised in the democratic tradition of States rights are outspoken, as are the men of other sections, in their criticism of the course of government which is making confusion worse confounded.

The billions spent have not done the work promised and the vital recurring insistent question everywhere is "how is the debt to be paid"?

If Business is to pay it they want radicals put out and conservatives put in. They are tired of political platitudes and sophistries. They want a definite constructive answer.

FEBRUARY, 1938

# WHERE PUBLIC SAVING

GOES WITH

# PUBLIC SAFETY!

Keeping a city safe, clean and up-to-date is an easy and economical task with is an easy and economical task with it cast is caterpillar" Diesel Tractors I for instance, after the sewer-pipe had been laid it cost only 7c an hour for fuel to fill these ditches only 7c an hour for fuel to fill these ditches in Frederick, Maryland—using a in Frederick, Maryland—using a Roadbuilder.

"Caterpillar" Diesel Trace
"Caterpillar"
Choate Roadbuilder.
That's typical of the way the "Caterpillar"
Diesel Tractor saves money on many municipal jobs . . . removing snow . . . grading streets and alleys . . . or buildozing garbage



# CATERPILLAR

TRACTOR CO., PEORIA, ILL

DIESEL ENGINES . TRACK-TYPE TRACTORS . ROAD MACHINERY

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#### FEBRUARY 1938

Volume CVII No. 2



Devoted to the Upbuilding of the Nation Through the Development of the South and Southwest as the Nation's Greatest Material Asset

#### Published Monthly

by the

MANUFACTURERS RECORD PUBLISHING CO.

Frank Gould, President

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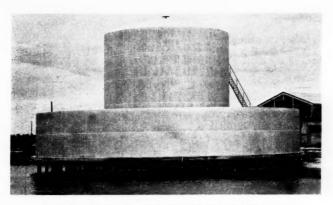
> Cleveland, Ohio—1745 Wymore Ave. Phone: Mulberry 3499

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Subscribers are asked to notify us of change in address to avoid delay in service.

PUBLISHERS DAILY CONSTRUCTION BULLETIN AND BLUE BOOK OF SOUTHERN PROGRESS

Member



16,000 Barrel Fuel Oil Tank at the Brunswick Pulp and Paper Company Plant, Brunswick, Ga.

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Cover Illustration-Blast Furnace at the Hamilton Coke & Iron Co., Hamilton, Ohio

# Keeping abreast of PROGRESS

CAST iron pipe, a product older than most American cities, keeps pace with Progress toward the City of the Future. No period in the long history of cast iron pipe manufacture has been so fruitful of product improvement as the past 20 years. This applies to pipe and joint design, to metallurgical advances, production methods and quality control. Within this period, for example, great strides have been made through research in the modern laboratories of the industry. Cast iron pipe has been the standard material for underground mains for nearly three centuries. That it is the standard material today is evidence that pipe founders are keeping abreast of Progress.



Installing a cast iron water main that will serve for centuries. The world's first cast iron water main and America's first, installed 274 and 116 years ago, respectively, are both in service.

#### CAST () IRON

Trade Mark Reg.

THE CAST IRON PIPE RESEARCH ASSOCIATION, THOMAS F. WOLFE, RESEARCH ENGINEER. 1015 PEOPLES GAS BUILDING, CHICAGO, ILLINOIS

# CASTURONUPIPE

THE STANDARD MATERIAL FOR UNDERGROUND MAINS

# A REPORT OF Constructive Public Service

#### BY A PUBLIC UTILITY SYSTEM

THIS informal report, for the year 1937, is submitted for the information of the general public as well as the customers of the operating companies in the Commonwealth & Southern system and the security holders of The Commonwealth & Southern Corporation.

The Commonwealth & Southern system consists of five northern and six southern operating companies which together serve electrically over 3.100 cities, towns and hamlets. They have an average population of 1,650 each. A total of over one million homes—634,000 in the north. 446,000 in the south—are served.

A large number of the customers live on farms or in outlying territory where costs of serving electricity—particularly transmission are high in comparison with more densely populated areas.

The operating companies are bound together by the unified sales promotion, engineering, operating and financing staffs of the non-profit Commonwealth & Southern service organization. This unified operation makes it possible for the operating companies to render the constructive public service outlined here:

#### FINANCING

The service organization during the last three years has negotiated the refunding of \$264,174,700 of outstanding bonds and preferred stocks of the northern operating companies with new securities bearing lower rates of interest and dividends. As a result the northern companies effected savings of over three and one-half million dollars a year in interest and dividend charges.

In the south, it has been wholly impossible to refund any of the outstanding securities of the operating companies because of the actual and potential competitive operations of the Tennessee Valley Authority. Also because the Federal Government, in that area, is pursuing a policy of securing markets for T.V.A. power by free gifts to municipalities of 45% of the cost of new distribution systems with which to duplicate existing utility systems.

The senior securities of these southern operating companies, by reason of this activity of the Federal Government, are selling currently in the market at \$88,000,000 less than their par value. This affects 83,000 owners of these securities. Moreover, 200,000 people own the stock of The Commonwealth & Southern Corporation whose investment, in turn, is depressed.

Because of the inability of these companies to raise money in the open market. The Commonwealth & Southern Corporation, in the last five years, has advanced to these southern companies approximately \$30,000,000 from its own treasury, mainly for indispensable construction work. Thus have they continued efficient service to the 550,000 urban, suburban, farm, commercial and industrial users dependent upon them.

#### CHEAP ELECTRICITY

City and farm customers of Commonwealth & Southern system pay an average residential rate of 25% below the national average. They paid about 3½ cents (average) per kilowatt hour for the year 1937. This is a lower average residential rate than is obtained in any other utility group in the United States.

#### **GREATER USES OF APPLIANCES**

For years the Commonwealth & Southern system has intensively promoted the use of all kinds of labor saving and convenience appliances in the home. Northern and southern companies cooperate with local dealers and help them arrange sales of equipment at prices and on monthly payments to suit all classes of customers. In 1937 net sales of appliances made by the system, itself, were about \$17,500,000—a new high in appliance sales.

#### RESULT-HIGHER K.W.H. USE

As a result of these progressive policies, the average Commonwealth & Southern home—in the northern and southern territories—is using 37% more electric service than is being used in the average American home. To state it another

way, the average C. & S. home used close to 1.100 kilowatthours of current in 1937—enjoyed an electrical standard of living one-third higher than the average U. S. home.

#### BRINGING THE CITY TO THE FARM

The companies in the system are and have been for years aggressively pushing rural electrification. More than 7,300 miles of new lines were built during 1937 to serve over 35,000 new rural customers while 15,000 new rural customers were being added to already existing lines. No other major system is doing more for rural electrification.

#### HELPS CARRY THE TAX BURDEN

Taxes of the Commonwealth & Southern system to various local, state and federal governmental agencies, amount to \$18,337,000 for the twelve months ended November 30, 1937.

#### STRUCTURE AND POLICY

The Commonwealth & Southern Corporation has a simple, clear corporate structure. It directly owns common stock and other securities of its operating companies and makes no profit on supervision. financing, engineering or from any other service.

The Corporation considers that its function is to see that consumers of the system receive the largest possible use of energy at the lowest possible rates. Also, to give a diversity of investment which, in the absence of government competition, should insure a stability of investment to the thousands of individual owners of its securities.

The Commonwealth & Southern system is now giving its consumers large average use of electric energy at low average rates. If taxes were not so high and if the southern companies could refund securities, the system could earn a satisfactory return for its investors and could spend a great deal more money expanding its facilities and thus aid a general business recovery.

WENDELL L. WILLKIE, President

# The Commonwealth & Southern

MICHIGAN • ILLINOIS • INDIANA • OHIO • PENNSYLVANIA • TENNESSEE • ALABAMA • FLORIDA • GEORGIA • MISSISSIPPI • SO. CAROLINA



 $P_{\,\rm Woman}^{\,\rm ARDON\,\, US}\!\!-\!\!{\rm but}$  there is some sense in the habiliments of

Ever weigh a slide fastener? Some are heavy; some (made, of course, of Aluminum) are light. Why, you may properly ask, is lightness important in so small a thing as a slide fastener?

That's where we have to doff our hats to dress designers as practical engineers.

Slide fasteners of Aluminum are used as closures for light, soft, lissome fabrics. Fasteners of heavy metal would ripple them, sag them, bulge them . . . and completely ruin that poured-in effect so dear to the desire of Woman.

Weight matters, and the makers oblige with light fasteners made strong with the Alloys of Alcoa Aluminum.

Another chorus in the swan song of needless weight!

IT'S A LIFTABLE IDEA—The cabs on a recent big locomotive order were too heavy. Cure: design of light Alcoa Aluminum.

A coal miner saw no reason for swinging needless weight in his shovel. Result: A light Aluminum shovel is being marketed. Weight matters! Weight drags! Weight costs money.

But weight can be cut—economically—with the Alloys of Alcoa Aluminum. They are strong; they come in every needed form; they are easy to fabricate. And we are geared to help you use them at the lowest possible cost. ALUMINUM COMPANY OF AMERICA, 2109 Gulf Building, Pittsburgh, Pennsylvania.





ALCOA · ALUMINUM

### GULFCREST OIL HAS RUN 3 TIMES AS LONG

AS ANY OIL WE EVER USED IN THIS TURBINE



THIS GULF ENGINEER was right when he said that Gulfcrest is an entirely different kind of turbine oil. The batch we have in this unit now has run three times as long as any oil we ever used."-states this power plant engi-

The quality of Gulfcrest Oil is not due alone to the fact that it is made from the finest lubricating oil stocks obtainable. Gulfcrest is refined by a special process-Gulf's Alchlor Process-which gives this quality turbine oil a higher degree of stability than any of which we have record. The four reasons at the right tell you why this is true.

#### Gulf Oil Corporation **Gulf Refining Company**

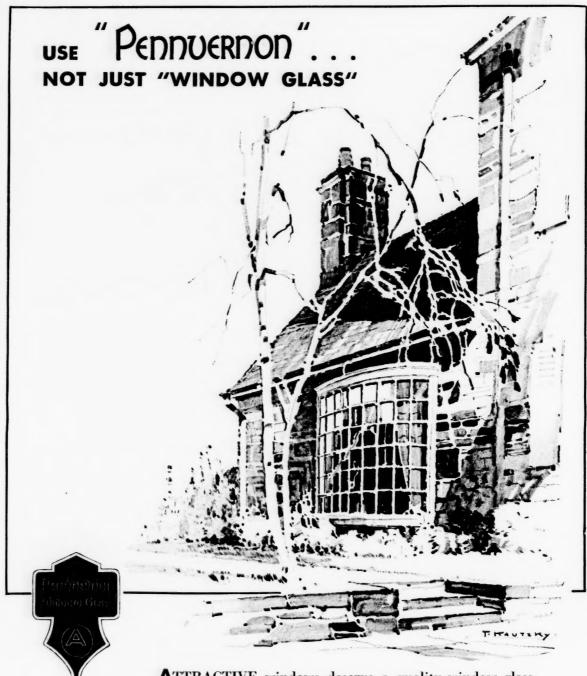
OFFICES: GULF BLDG., PITTSBURGH, PA.

Lubricant of Unparalleled Quality

- Refined by the ALCHLOR Process. This famous process, patented and owned exclusively by Gulf, is the most thorough and effective method for removing chemically active hydrocarbons as well as the general run of impurities present in all crudes.
- 2 Highest resistance to oxidation. Because this famous ALCHLOR Process synthesizes and rearranges the molecular structure of certain hydrocarbons, resulting in a finished product of greater stability, GULFCREST OIL stands alone in its high resistance to oxidation.
- Highest resistance to acidity and sludge. Because of the elimination of oxidation catalysts in addition to the unparalleled refining power of the Alchlor Process, these oils form less gum and deposits, less emulsion and sludge, when mixed with water over a period of several years continuous operation, than any other turbine oil of which we have record.
- Highest bilouatt-bour performance. Because Alchlor not only makes possible an oil more thoroughly refined and homogeneous but also creates antioxidants, these oils have great resistance to deteriorating influences and are longer lived. Less makeup oil is required.



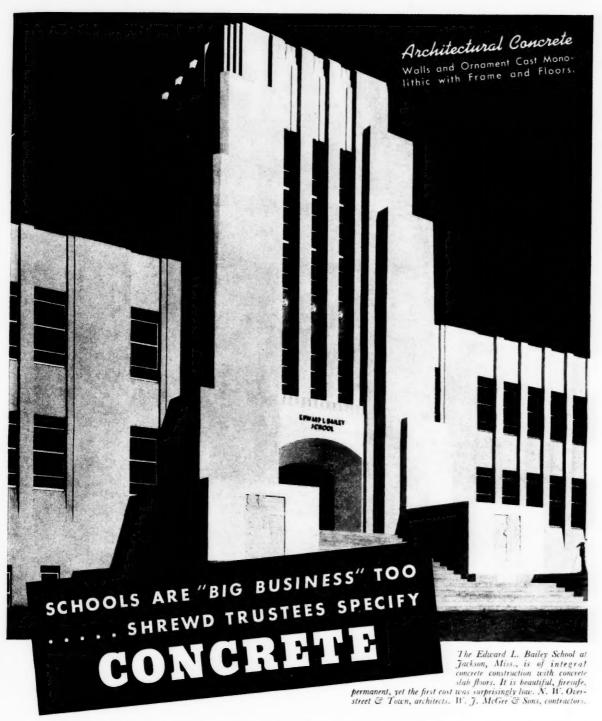
FEBRUARY NINETEEN THIRTY-EIGHT



ATTRACTIVE windows deserve a quality window glass. A window glass like Pennvernon. It is clear. Unusually free from flaws. Brilliant and reflective on both sides of the sheet. Each light is paper-packed.

# POINT PLATE GLASS COMPANY PLATE GLASS COMPANY

Makers of Wallhide Paint · Waterspar enamel and Varnish · Sun-Proof Paint · Florhide · Polished Plate GLASS · Mirrors · Pennvernon Window Glass · Duplate Safety Glass · Pittco Store Front Metal · Distributors of PC Glass blocks and Carrara Structural Glass



SCHOOL boards and trustees are as anxious as you are to build for utmost economy, safety and permanence. So the buyers of schools, like commercial, industrial and public buildings of all kinds, are turning to concrete. Properly designed reinforced concrete gives utmost protection against the hazards of fire and explosions and even against tornadoes and earthquakes.

Modern methods of concrete construction permit walls and ornament of your building to be cast integrally with frame and floors. The first cost is low, you'll save on maintenance, and your building will have distinctive beauty.

Your architect or engineer can apply the money-saving architectural concrete technique to the building you have in mind. Ask them for the facts—or one of our engineers will be glad to call. Send for the free booklet, "Beauty in Walls of Architectural Concrete." If you are particularly interested in schools, ask for "Concrete in Schools," giving helpful data on functional and structural design.

#### PORTLAND CEMENT ASSOCIATION Dept. A2-21, 33 W. Grand Ave., Chicago, III.

A national organization to improve and extend the uses of concrete through scientific research and engineering field work.

FEBRUARY NINETEEN THIRTY-EIGHT

# MORE CAPACITY

WITH THE SAME BOILER

THE BARTGIS BROTHERS CO.

"We Make the Package that Makes the Sale"

Ilchester, Md. Mer. 11, 1937.

Detroit Stoker Company, General Motors Building, Detroit, Nichigan.

Attention: Mr. W. H. Rea, President.

Gentlemen:

In response to your letter of March 9th. We are pleased to reiterate the statements made in our letter

The Detroit Multiple Retort Underfeed Stoker that you installed for us in the summer of 1936 has proven itself very satisfactory. We have been able to use a lower fusing coal of high quality which we could not use in our previous unit on account of the clinkering conditions. This has saved us an amount of money already equal to the price of the Stoker. to you of October 6th, 1936.

Stoker.

FOLDING BOXBOARD CARTONS FOLDING BOXES

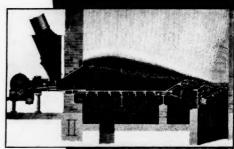
We have also been able to develop approximately 300 Horsepower more which naturally is given us more steam for process resulting in a specific production increased production in the state of the state

Up to this we have had no maintenance expense on this

Yours truly,

Our Plant Covers Over 100 Acres

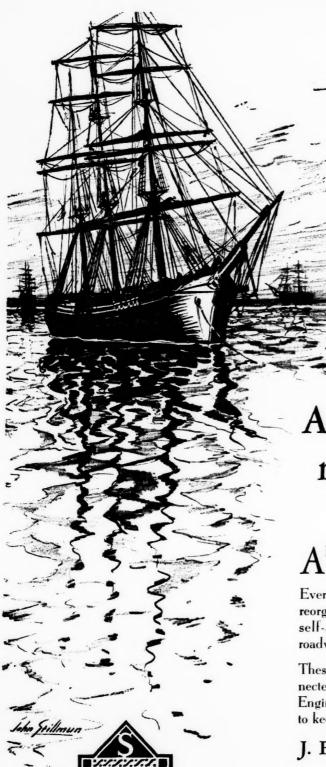
THE BARTGIS BROS. CO. Another Well Satisfied User



Write for Bulletin 143

#### ROIT STOKER

Fifth Floor, General Motors Building, Detroit, Michigan · Works at Monroe, Michigan District Offices in Principal Cities . Built in Canada at London, Ontario



A profit cannot ride at anchor -for long

PROFIT becalmed is at the mercy of The tides of business.

Every economy of production, every effective reorganization of equipment and process, every self-amortizing improvement, deepens the roadway and protects the profit potential.

These steps (and even some which are connected with distribution) are tasks for the Engineer who marshals facts and experience to keep profits moving forward.

#### J. E. SIRRINE & COMPANY

Greenville

Engineers South Carolina

Rayon Plants Surveys Steam Utilization Water Treatment

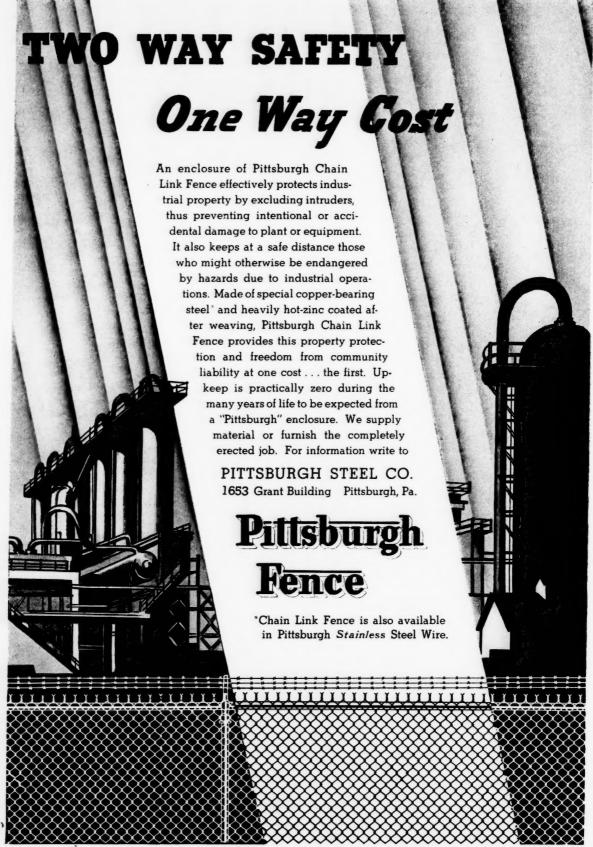
Tobacco Factories Power Applications

Reorganizations

Sanitary Engineering

Textile Mills Warehouses Hydro-Electric Power Plants

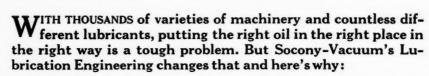
Paper Mills Appraisals Reports Steam



# Lubrication Engineering

"PRODUCTION INSURANCE" BY GUARDING AGAINST COSTLY MACHINERY FAILURES THAT MAY INTERRUPT OPERATIONS IN YOUR PLANT.

# MAKES MACHINES



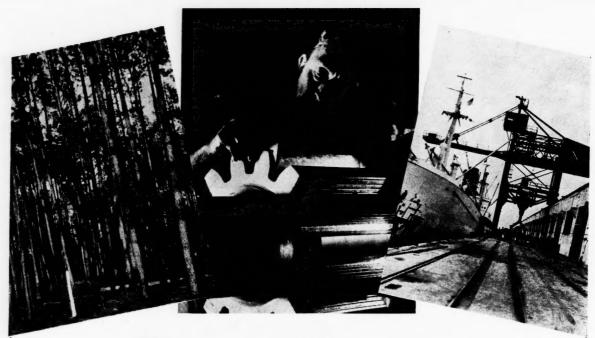
Trained men who know their oils and greases analyze your individual operating conditions. They put quality lubricants where needed, less expensive lubricants where this economy does not interfere with gaining maximum machine efficiency.

In hundreds of different industries, men who own plants and men who work in them say that Lubrication Engineering is the up-to-date way to lubricate a plant. Today, Socony-Vacuum is making machines earn more in such fields as steel, textiles, mining, electric power plants, etc. Why not decide to find out what Lubrication Engineering can accomplish in your plant?

# OCONY-VACUUM OIL



**MAKERS OF** MOBILGAS MOBILOIL GARGOYLE **INDUSTRIAL** LUBRICANTS



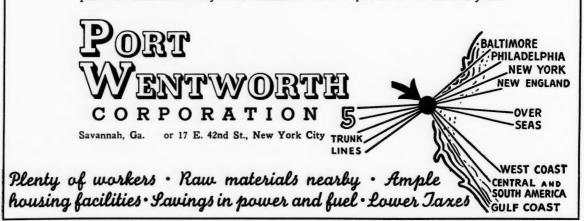
# If your problem involves MATERIAL, MEN, MARKETS!

The industrial sites of the Port Wentworth Corporation are just outside the city limits of Savannah, on the deep water of the Savannah River, and superbly located for rapid movement of both raw materials and finished products. Savannah is served by 5 trunk line railroads. Its large, sheltered harbor is the principal ocean outlet for the Southeast and it is fully equipped with docks, warehouses and other modern facilities for coastwise and overseas shipments.

In the State of Georgia is mined almost every mineral used commercially. Unlimited timber acreage is available at low cost. Here grow cotton, fiber, tung trees, soy beans and sweetpotatoes—all of which chemical research is today using to revolutionize industrial manufacture.

Skilled, semi-skilled and common white American labor and also good colored labor is abundant. Housing facilities are ample and living expenses are low. Savannah has always enjoyed a freedom from strikes.

The saving in power and heating costs alone is considerable. Nearness to raw materials and accessibility to the great markets of the world cut transportation costs drastically. New industries are exempt from taxes for five years.



# NORTH CAROLINA offers real

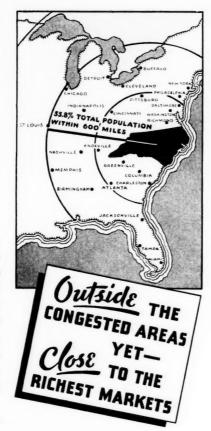
## opportunities to INDUSTRY

All the advantages of LOW PRODUCTION COST plus
LOW DISTRIBUTION COST

INDUSTRY thrives here... for many reasons. To begin with, North Carolina is one of the oldest industrial States in the Union. Over a period of 158 years, constant study of the problems of business has resulted in a sympathetic understanding — resulting in legislation helpful to business.

Here are abundant supplies of raw materials and econom-

ical power — plenty of native-born workers, friendly, intelligent, and cooperative. Here the climate is moderate the year 'round—requiring less expensive plant construction and



Plenty of
RAW MATERIALS
NATIVE-BORN WORKERS
ECONOMICAL POWER
and a
MODERATE CLIMATE

reducing production costs. Itself a great consuming market, within a 600 mile radius of North Carolina lives over half the Nation's population—assuring economical distribution. A network of paved highways plus 46 railroads and excellent ocean ports provide splendid transportation facilities. At your request, specific facts relating to your business will be compiled and

furnished by competent Industrial engineers. Write Industrial Division, Department of Conservation & Development, Room 32, Raleigh, N. C.

North CAROLINA HOME OF SUCCESSFUL INDUSTRY

#### TO AID AND PROTECT INDUSTRIAL DEVELOPMENT IN THE SOUTHEAST



#### WITH MALICE TOWARD NONE

THE alarmed attitude of other sections of the country toward the purposes of the Southeastern Governors' Conference as reported by the PRESS, is indeed surprising. The Southeast feels that it has a natural right to call to the attention of American Industry the many advantages this section offers. Forcefully and truthfully-with malice toward none-the natural advantages offered by the Southeast will be placed before the Nation in this and subsequent advertisements. The statements made are simple truths and will stand four square in the light of any inquiry which seeks unbiased facts. The Southeast wants no one to seek locations in her midst

expecting cheap and low paid labor or long hours of work. Sweat shop operators are, and will be, unwelcome. We have stated that the year 'round moderate climate of this section makes possible LOWER LIVING COSTS for Better Standards of living; less for rent, less for fuel and less for food and clothing for a family. The Southeast knows no long months of unrelenting cold, heavy snow, sleet and ice. This insures lower capital investments, lower construction costs, lower production costs. Analyze the above economies, and you will readily understand why workers in this section enjoy BETTER STANDARDS OF LIVING AT LOWER LIVING COSTS.

#### Southeastern Governors Conference

LAWRENCE WOOD ROBERT, JR., Executive Director, Bona Allen Bldg., Atlanta, Ga.

















#### We. THE GOVERNORS

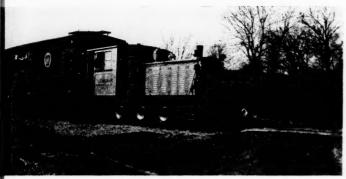
WITH a view to aiding industrial expansion of our section and the stabilization of employment, we, the Governors of the Southeastern States, set forth the following objectives: 1. Equitable freight-rates as affect the Southeast. 2. Uniform taxation policies. 3. Friendly labor attitude between employer and employee. 4. Co-operation with Federal Government on

propermajor policies affecting industrial development. It will be our aim by working together on these objectives to maintain conditions favorable to sound industrial development so that the Southeast will reap the full benefits of the ever-increasing trend toward Industrial Decentralization and gain a proper balance between Agriculture and Industry.

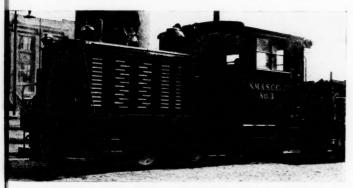
# APLYMOUTH

# WIND COMPANY MYSEMAL WEEN

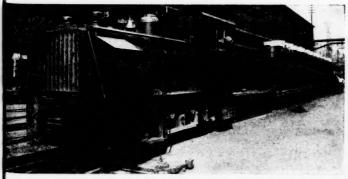
65-ton Butane-Electric, replaced two 65-ton steamers.



One of three operated by this company. One butane. Two gasoline.



250 H. P. Gasoline, 30-ton, replaced 50-ton steam switcher.



Narrow gauge Plymouth direct drive diesel in mould yard service.

# FOR EVERY SERVICE!

For heavy switching—investigate the propane-butane locomotive — cheap fuel, useful in many other ways in most plants—a Plymouth development.

Plymouth diesels in a wide range of types and sizes—standard and narrow gauge.

Here's an example — United Engineering & Foundry Company, Vandergrift, Pa. — heavy switching—replaced 45-ton steamer — averages 4.2 gallons gasoline per hour, 15c per hour total maintenance — one gallon lube oil per 48.6 gallons fuel, including change.

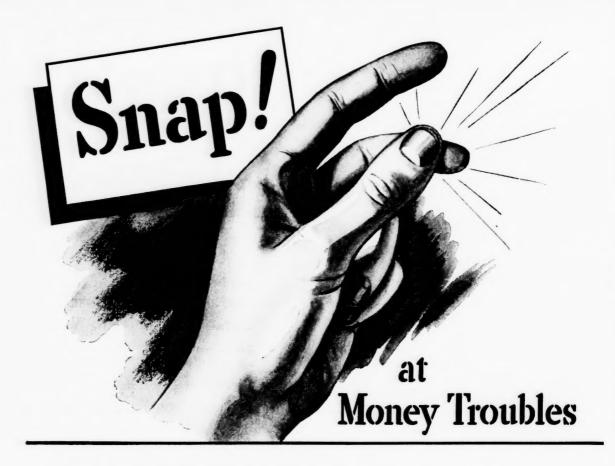
Other records just as convincing.



#### PLYMOUTH LOCOMOTIVE WORKS

Division of The Fate-Root-Heath Co. PLYMOUTH, OHIO, U. S. A.

PLANT SWITCHING is cheaper with PLYMOUTH
GASOLINE \* DIESEL \* BUTANE \* PROPANE
LOCOMOTIVES



#### Keep capital liquid, credit high with controlled collections and limited loss

Now your business can be flexibly financed—you can control your cash position at will, and at short notice—and you can limit possible credit losses to a small definitely agreed percentage. All this and your customers are not notified!

With the introduction of the LIMITED LOSS feature, we have made the discounting of accounts receivable not only the most flexible and economical form of modern industrial financing, but also added a strong protective factor that fits in with the most conservative management.

Hundreds of substantial concerns use this sound method of maintaining a strong cash position and high credit rating.

If you need cash to meet pay rolls, to discount your bills payable, to buy raw materials at lowest cash prices, or for other sound business reasons, investigate the advantages of this flexible, economical plan.

★ Why not give us an opportunity to explain? A personal interview will give you a better, quicker understanding. Our representative will keep any appointment at your convenience.

#### COMMERCIAL CREDIT COMPANY

BALTIMORE

NEW YORK

CHICAGO

PORTLAND, ORE.

SAN FRANCISCO

# It's time to CRACK DOWN

on water-main costs

FOR YEARS, American cities have reported thousands of water-main breaks annually due to sudden fractures of friable pipe . . . with repair costs and damages amounting to many thousands of dollars. And here's what leading city engineers are doing about it-they're swinging over to steel pipe. These men have found by long experience that the high tensile strength and flexibility of steel are

valuable assets. They have seen NATIONAL Steel Pipe stand the test of years under the constant vibration of heavy street traffic . . . under the stresses of trench pressures, cave-ins, settlements, and washouts. They know that it has the necessary reserve stamina to resist unpredictable forces that frequently cause damage to pipe of less reliable material.

For trustworthy water mains, specify NATIONAL Steel Pipe. Immediate savings in installation costs, and long-term savings in maintenance expense will credit your judgment. And your city will receive the benefit of water service that is thoroughly dependable.

THE TREND IS TOWARD NATIONAL STEEL PIPE Offers greater all-round reliability.

Has low friction loss . . . greater carrying capacity.

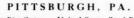
Eliminates risk of sudden fractures.

Saves money on repair bills.

Helps keep streets open for traffic.

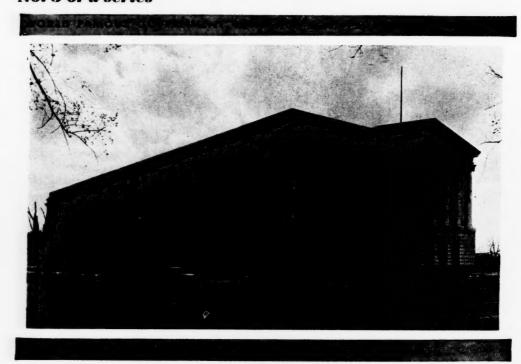
Withsteads hidden pressures. Because it:

**NATIONAL TUBE COMPANY** 



Columbia Steel Company, San Francisco, Pacific Coast Distributors . United States Steel Products Company, New York, Export Distributors

FEBRUARY NINETEEN THIRTY-EIGHT



# Specified and Used in the NEW HOUSE OFFICE BUILDING Washington, D. C.

HERE'S WHAT
LYONORE METAL IS
A commercial sheet metal
made according to an
exclusive formula which
scientifically combines iron
with chromium, nickel and
copper in such proporcopper in such proportions that the alloy lasts
tions that the alloy lasts
tions that the alloy lasts
tonsy steel, yet costs but
nary steel, yet costs but
a trifle more per pound.

FREE—Scratch pads and complete information about this remarkable alloy and its countless uses. Write today. THIS beautiful building was constructed to last. Therefore, only the best materials were selected. LYONORE METAL was specified and used in the ventilating and air conditioning system because of its superior corrosion-resistance, long life and lasting economy. Specify LYONORE METAL for all sheet metal work and be assured of life long satisfaction.

LYON, CONKLIN & COMPANY, Inc. Washington, D. C. Baltimore, Md.



**Iyonore Metal** 

CHROMIUM - NICKEL - COPPER - IRON ALLOY

"It costs less because it lasts longer"

## Why Copper Steel is the Right Material for Culverts



PERFORMANCE is the main objective in culvert installation-and the story of U·S·S Copper Steel is one of better performance at lower cost. The most convincing evidence of this is the fact that no culvert made of U·S·S Copper Steel has ever been known to fail structurally in service.

Copper Steel culverts are designed to resist such forces as sudden freezes, rapid thaws, sub-soil changes, heavy weight and vibration. They do not crack or fail under stresses that might destroy rigid materials.

UP under the constant pounding of traffic. The corrugations form strong repeated arches capable of carrying heavy loads.

COPPER STEEL RESISTS COR-ROSION. Countless installations and numerous tests conducted by independent testing laboratories show that U.S.S Cop-per Steel has the highest atmospheric corrosion resistance of any commercial cul-

NO CRACKING OR BREAKING from shifts in sub-soil. Corrugated culverts are

built like accordions, with enough flexi-bility to adapt themselves to changing soil pressures without failure.

TRAFFIC INTERRUPTIONS CAN BE PREVENTED. Copper Steel culverts are installed quickly and easily, often without stopping traffic. The result is substantial savings in time and labor costs.

LOW INSTALLATION COST. Copper Steel culverts eliminate much expensive foundation and form work, can be handled with fewer men and do not require highly skilled labor.

Copper Steel is its endurance. In 1911 wet and dry conditions. When galvan-U. S. Steel engineers discovered that ized, U·S·S Copper Steel has proved a little copper added to steel more over a period of years to be a most than doubles its resistance to rust and enduring, low-cost culvert material.

Another strong advantage of U·S·S atmospheric corrosion under alternate

#### U·S·S COPPER STEEL GALVANIZED SHEETS



CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh and Chicago COLUMBIA STEEL COMPANY, San Francisco TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham

United States Steel Products Company, New York, Export Distributors

#### STATESESTEEL

FEBRUARY NINETEEN THIRTY-EIGHT



The accountant calls it "good-will." We call it friendship... that intangible something which has helped Republic to become in a few short years one of the three leading producers of steel.

Republic didn't buy it ... for friendship can't be bought. Republic earned it through vision in the development of steels, by aiding and advising industry in the selection of the most efficient steels, through foresight in acquiring raw material reserves and improved facilities, and in establishing policies that protect its customers and all American Industry.

Your friendship is valued by Republic. We want Republic's friendship to be of increasing value to you. Republic Steel Corporation, Cleveland, Ohio.





#### PULP FROM SOUTHERN PINE

THE repeated statements by government officials to the effect that the establishment of pulp mills in the South at the present rate would exhaust the supply of pine timber for other industries have met widespread criticism. This is particularly true in the Southeast where some of the largest mills are located.

The claims of possible exhaustion have been so frequently repeated that they are viewed as having gone beyond the bounds of proper and reasonable caution. Dr. Charles H. Herty, nationally known industrial chemist who has devoted years of arduous work to the establishment of a news pulp industry in the South which will make the United States independent of foreign pulp supplies said recently in the Savannah Press: "Anyone familiar with the present conditions in the South knows of the rapidly increasing interest in organized fire protection and the planting of abandoned fields, and of the great increase in the number of trees being grown in the South today as compared with five years ago. It is probable that because of our lack of protection against fire in the past we shall have to eat into our forest capital for a few years, but an abundant harvest is in the offing. Within fifteen years a crop of pulpwood will be available to supply any amount for paper mill requirements. This can be best visualized by the following: In the South there are some 200 million acres of land partly cutover, partly woodlots and partly abandoned fields which, if protected from fire, can easily produce a cord of wood an acre per year. This means a maximum annual increased supply of 200 million cords. The entire world requirements for pulp and paper do not exceed more than 30 million cords. I therefore cannot feel anxious about the supply of pulpwood."

In the last two or three years new pulp mill

investments in the South approximate \$100,-000,000. They were planned and their locations decided, it is reasonable to assume, after thorough investigation of raw material available now and in the future. To overlook such a vital matter is not one of the mistakes of modern industry. They have purchased in the aggregate hundreds of thousands of acres of pine timber land. Experienced foresters are in their employ to use the most approved forestry practices in fire protection and replanting. As a matter of fact, the demand for seedlings is so great it has temporarily exhausted the supply. Why then are the South and investors being continually warned to go slow in establishing a new source of wealth that will increase employment, afford the farmer a new and wider market and as before stated, render the country eventually independent of foreign pulp which we are now importing at the rate of 3,250,000 tons per annum?

A high official of the Agricultural Department said a few years ago it would be well to refrain from establishing more pulp mills in the South as our foreign friends needed the business to help them to buy in our markets. This, while men here were looking for jobs!

More recently, the Chief Forester in his 1937 report to the Secretary of Agriculture, advocates adoption of a three point program: (1) increasing the acreage of public forest lands until it exceeds the amount in private hands. (2) extended cooperation with private owners and (3) regulation of management of privately owned forest land. To support his recommendation, the Forester cites the drain upon forest lands in excess of growth during the years between 1925 and 1929—in spite of much later figures being available and the statement of Captain J. B. Woods of the National Lumber Manufacturers Association (formerly of the Forest

#### As we see it-

Service) in the Forest News Digest, "it is generally known, of course, that since 1930, yearly growth of our forests has equalled or exceeded in wood volume the total annual cutting drain." This is but one of the many statements (several of which are later modified by elaboration in a subsequent part of the report) questioned by recognized authorities, which the Forester uses in attempting to minimize, if not discredit, the work of private interests. The Manufacturers Record has long advocated the necessity of good forest practices and cooperation with the Forest Service field operatives, and it now sympathizes with the latter in their wonderment of the program which is being pursued in Washington. In particular, the Forester lays emphasis upon the South for its "exploitation," and though it is possible the South is thus specifically mentioned because of the country's entire forest land the majority is in this region, nevertheless we would like to know the extent to which pulp plants in other sections have been discouraged?

#### The Conference of Small Business

There are several important points brought up in connection with the Conference of Small Business Men

held recently in Washington that are hard to reconcile. For example, while the invited conferees were still on their way to Washington and before they had had any opportunity even to discuss as a group any subjects for suggestion to the government, it was announced by the Administration that the problem of supplying new capital to smaller concerns by government loans headed the list of things to be studied. It should be emphasized that there was nothing made public from any other source to indicate this represented the views of the business men themselves.

While in the final recommendations to the government there did appear a suggestion to provide an inexpensive method of securing loans for the purchase of inventory, machinery and equipment and for the construction of buildings through an agency designated or created by Congress, there were also three others giving an entirely different view. These were as follows: "We urge the encouragement of the investment of private capital in new enterprises," "We urge that government expenditures be curtailed and the budget be balanced" and, "We propose that government should cooperate with and not compete with business."

The suggestion about government loans contradicts the general tone of the entire remainder of the report. How can the investment of private capital be encouraged if government money is made available for the same purpose at lower rates than would ordinarily attract private capital in a business venture? How can government expenditures be curtailed and the budget balanced if public funds are to be spent in this new way? And, how can government refrain from competition with business if an agency is set up in the investment field to directly compete with private capital?

Then there is a general question which might be asked concerning the report as a whole as finally submitted to the President. Why were some of the recommendations "toned down" by a "committee" after the conference had adjourned? Reference to the "fear of further undue government interference" and "unwarranted and malicious attacks on business by administration representatives should be permanently stopped," were omitted as were several others.

Unless the true sentiment of the body of small business men which met in the sincere hope that their proposals would be seriously considered was accurately and fairly reported to the Administration, then the whole affair was a farce, as far as any pretense by the government of giving an ear to the business men's side of the story is concerned.

On the whole, however, the "small" business men did a good job where many "delegates" of big business had previously failed in visits to the White House. While not in any way intended to cover all of the attending problems of the current recession, the program of small business emphasized all of the important points business has striven for under the New Deal. It did condemn "government interference" and "malicious attacks on business." It asked that employer and employee alike be held responsible for the faithful observance of mutual labor agreements and that relief administration be returned to local communities and questioned the merit of a standard wage and hour bill—these of course in addition to the suggestions mentioned earlier in the foregoing.

Shortly after the program was submitted to the President he quickly appraised many of the 23 proposals as constructive. Others, however, were called impractical but it has not yet been indicated which are favored and which are not—over half of them, however, are critical of the New Deal.

The conference exploded one myth, if it ever did exist. It showed that there is no fundamental difference between the attitude of big and little business, and that both find in the New Deal the same major hinderances to business recovery and sound operation.

#### The Work of the Road Builder

Those who were fortunate in being able to attend the American Road Builders meeting and exhibition in

Cleveland last month found an atmosphere of optimism that was contagious. The men who build roads are a happy, healthy lot, but their optimism is borne of sound reason. America has its mind set upon good roads and more of them, and those who cater to the demand find constant and recuring satisfaction in a work that uplifts the community, takes a lot of the drudgery out of life and increases wealth through enhanced property values. All good reasons for the road builders happiness.

#### As we see it-

(Continued)

Road building activity was credited with being a major stimulus in bringing the country out of the slump of 1921. May its good work go on.

A journey by motor in January through seven or eight of the states of the South showed many examples of the truly great work of the engineering profession. Roads of today in width and safety are far removed from good roads of a few years ago. In point of mileage the country is only at the beginning. The older good roads must be largely rebuilt and to the 15% they represent must be added a large part of the remaining 85% that is not now improved.

Four lane highways and by-pass roads around congested areas are common. Banked curves with ways cut to widen the view ahead are built to make traffic safer and pleasanter.

City streets can accommodate the traffic only at the expense of costly delay. Overhead roads, express roads, night lighted boulevards from ocean to ocean are not just dreams.

#### Industrial Opportunity, Not Cheap Labor

The Southeastern Governors Conference is justifiably surprised at the attitude adopted by other sections of

the country in viewing with alarm the desire of these Southern states to point out their advantages to industry. Because the South has always been regarded as an agricultural region, its industrial potentialities have been overshadowed, but with the development of chemical aids, its ideal opportunities in the form of raw materials, transportation facilities, climate, and native American labor, are unsurpassed anywhere. To call these to the attention of American industry is but to increase the country's wealth. Meanwhile, as the Governors point out "The Southeast wants no one to seek locations in her midst expecting cheap and low paid labor or long hours of work. Sweatshop operators are, and will be, unwelcome."

#### Century of Achievement

The Norfolk and Western Railway, rounding out in 1938 one hundred years of service in transportation,

may point with pride to an enviable record. The history of this railway stretches back to a time when American enterprise, reaching out more and more to the West, saw that continued progress was dependent then, as it is today, upon the efficiency of transportation.

The part the Norfolk and Western has taken in the development of the territory it traverses is well known. It has been a vital force always in its growth and upbuilding.

The practical operation of the road has been largely in the hands of men who have come up from the ranks,

and the mutual regard each branch of the service has for the other is a splendid example of fraternal spirit. Perhaps to this also is due in large part the railway's financial success.

The Manufacturers Record congratulates the Norfolk and Western upon its long record of achievement.

#### Constructive Public Service

Wendell L. Willkie, president of the Commonwealth and Southern Corporation, has issued "a report of con-

structive public service." He states that the corporation has supplied the householders of its territory with electricity at rates 25 per cent below the national average, and the average home of its customers uses 37 percent more electric service than is used by the average American home.

The corporation serves 3100 cities and towns and includes in its customers 634,000 homes in the North and 446,000 in the South. Incidentally, it pays to government agencies, local, state and Federal, \$18,337,000 in taxes.

During three years it has been able to refund \$264,174,700 of securities of its Northern operating companies, with a resulting saving of \$3,500,000 a year in interest and dividend charges, but "it has been wholly impossible to refund any of the outstanding securities of the operating companies in the South because of the actual and potential competitive operations of the TVA."

This notwithstanding the fact that during this period there has been an easy money market with the lowest interest rates obtainable for many years.

These operating companies have been pioneers in development. They have renderd material aid in locating industries which utilize Southern resources and create new wealth. Their stockholders have invested their savings to explore and upbuild new fields. The growth of their territory has shown what this "venture" money of private enterprise has helped to accomplish.

Why is it then that an evidently legitimate business that has rendered efficient service, and at a lower price than the average for the country, must be harrassed by government competition to the point of distraction? Here is something that is basically and radically wrong. And there is no record of success by the TVA experiment, which is being carried on at such grave cost to taxpayers that explains in any way the reasonableness of such competition.

It is outside the province of American government to engage in such competition and yet more of it is planned and free government money is said to be available to municipalities to the extent of 45 per cent of the cost of new distribution systems which will duplicate existing lines.

#### The Pulp and Paper Industry in North Carolina

John C. Baskerville

N. C. Dept. of Conservation & Development

ORTH Carolina is attracting increased attention from the paper pulp industry because of its 20,000,000 acres of forest lands, of which at least 14,000,000 acres are in pine suitable for the manufacture of pulp. Equable climatic conditions, adequate water supplies, good transportation facilities and proximity to large markets are also factors which are focusing the attention of the pulp industry on the pine belt of North Carolina. The presence of native born labor, both white and colored and the fact that wood-cutting operations may be carried on twelve months in the year, making it unnecessary for pulp plants to carry large quantities of wood in storage. also serve to make North Carolina attractive to concerns contemplating the building of new pulp plants.

Within the past year the Kieckhefer Container Company has completed and put into operation a new pulp plant at Plymouth, N. C. with a capacity of 300 tons of sulphate fibre per day. The Plymouth plant is now known as the North Carolina Pulp Company and the pulp is shipped in barges to the Kieckhefer Container Company, the Rockford Fibre Container Company and the Eddy Paper Corporation in Delair, New Jersey, for final fabrication into containers and paper. It is understood that this company has already purchased approximately 50,000 acres of timber lands to be held in reserve. It is now buying virtually all of its pulpwood from farmers and land-

The Riegel Paper Corporation, with four plants in New Jersey, has purchased some 130,000 acres of forest lands in Brunswick and Columbus counties and is planning to build a sulphate pulp mill with a capacity of 125 tons a day at Acme. near Wilmington, on the Cape Fear river. This company also plans to ship pulp from its North Carolina plant to its New Jersey mills by water. The Riegel company plans to invest approximately \$1,-500,000 in its plant, which will give employment to several hundred persons. The tract of 130,000 acres it has already purchased is the largest single timber tract owned by a private corporation in North Carolina. The company has already set up a cooperate fire protection association under the supervision and direction of the North Carolina Forestry Division of the Department of Conservation and DeThe Pine Forests of North Carolina are Capable of Supplying More Than Twice as Many Cords Annually as are Now Consumed by All the Pulp and Paper Mills in the South



velopment. Many miles of fire lanes have already been laid out, forest fire patrol trails are being built and several forest fire observation towers have been located or are under construction.

Within the last few weeks another large paper pulp company has exercised an option on 400,600 acres of timber lands in the eastern part of the state but has not yet decided upon a location. Another large pulp concern is known to be definitely interested in building a plant in the state and is now investigating several locations along the eastern edge of the central Piedmont section.

The Forestry Division of the Department of Conservation and Development has recently established a bureau of forest management, under the direction of Assistant State Forester F. H. Claridge, which has as its chief objective the education of the farmers and landowners in

proper cutting methods, so as to insure a continuous supply both of pulp wood and saw timber. Landowners are showing more and more interest in this program and for the most part are giving excellent cooperation. A good many owners of large timber tracts are also seeking the advice and assistance of the forest management bureau in working out a longrange program for the cutting of their timber and the reforestation of cut-over lands.

The Forestry Division, through the forest management bureau, is trying to get farmers and landowners to think of their timber and pulp-wood as they would any other crop and to harvest it from year to year just as they do their other crops, rather than to cut all their timber at one time and leave nothing standing for future use. The pulp companies operating

(Continued on page 64)

# The Hardwood Forests of the Lower South

THE average well-informed man thinks of the Lower South as a pine country and does not realize the almost universal prevalence of hardwood species or visualize the great expanse of hardwood forests throughout the region. One of the outstanding and unexpected findings of the recent inventory of the forest resources of the Lower South, made by the Forest Survey of the U.S. Forest Service, is that in the twelve states or portions of states (see map) extending from Charleston, S. C. to the plains of Texas and Oklahoma, and including the Delta of the Mississippi from the Gulf of Mexico north to Cairo, Illinois, hardwood forests. either pure or mixed with pine, occupy 64 million acres, or 51 per cent of the total forest area. Of the total volume of sawtimber in this region, 44 per cent is in hardwood species. 1

The recent and startling expansion of the pulp and paper industry in our territory has drawn the spotlight of public attention to the extent, the value, and the possibilities of our southern pine forests. The lively consideration that is being given to this part of the South's forest resource has tended to obscure that other and highly important component of our forest wealth, the hardwoods.

The commercial importance of southern hardwoods is amply attested by Census figures, which show that half of the hardwood lumber manufactured in the United States is grown in the Southern



BY

#### I. F. Eldredge

Director, U. S. Southern Forest Survey

States and that these states are also leading producers of veneer for furniture and packages, wooden barrels, handle stock. shuttle material, crossties, and a wide variety of other hardwood products. Practically all of the tupelo and magnolia lumber manufactured in the United States comes from the South, as does most of the red gum, more than half of the oak, Yellow poplar, ash, and sycamore, and important quantities of elm, maple, beech, and other hardwood species. That is not all; so far as we can see, the Nation must depend upon the South throughout the years to come to continue to produce at least this same proportion of the industry's hardwood requirements.

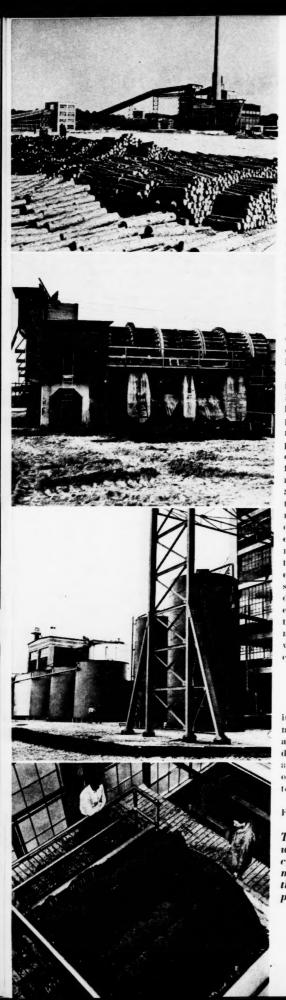
Pure hardwood forests, that is, stands with little or no admixture of pines, occupy 43 million acres, of which 28 million acres are in bottomlands and swamps and 15 million acres in the uplands. The Mississippi River Delta region contains 13 million acres of these pure hardwood stands. Also, mixed stands in which hardwoods make up from 25 to 75 per cent of the volume are found on 21 million acres scattered throughout the twelve states under consideration.

As in the case of the pine forests of the Lower South, the major portion of hardwood timber is second growth, which has come in following the removal of the original timber. Although the present heavy harvesting of southern hardwood species has developed mainly within the last four decades, hardwood forests in the Lower South have been subjected to cutting for more than a hundred years, and many of the present second-growth stands that followed early logging have attained sawtimber size and quality. While it is generally true that a new stock of timber has grown up to fill the gaps left by the harvesting of the old growth, these new stands have not attained the commercial value of the fine old stands they replaced. They are thrifty and fast-growing but lack the high quality that only maturity

The degree to which the transition from original growth to second growth has progressed is indicated by the Survey's findings that the area in original-growth hardwoods (including partly cut stands) has been reduced to only 21 per cent of the hardwood forest area; that second-growth stands of sawlog size now occupy 37 per cent of the area; that under-(Continued on page 54)

<sup>1</sup> In the Forest Survey data given here, cypress is arbitrarily included with hardwoods.





#### Florida Pays Tribut Opening of NewCo

WELL deserved recognition was given the work of Dr. Charles H. Herty at the opening and dedication of the Container Corporation's Fernandina plant on Florida Industries Day last month. While this plant will not manufacture newsprint, to which Dr. Herty has contributed so greatly, its location in the South, like that of 16 other mills in the recent past, is the direct result of Dr. Herty's work in the newsprint field. which alone has made the South and the country conscious of the potential value of one of its primary natural resources hitherto disregarded-vellow pine.

The country has not yet started to realize the more far reaching effects of Dr. Herty's work. For more than six years he has worked to demonstrate that white paper, particularly newsprint, can be made commercially from Southern slash pine by the sulphate process. While only one mill has been definitely planned so far for the manufacture of newsprint. many of the pulp mills located in the South during the last two years were established with the later possibility of newsprint in mind. It was not a coincidence that the pulp mill movement started immediately after Dr. Herty's experiments proved successful. The possibilities Southern newsprint opens up may be estimated from the fact that now we spend in the neighborhood of 200 million dollars annually for the purchase of foreign newsprint pulp. And this does not take into account the possibility of rayon manufacturing nor the other avenues which may be explored in the realm of cellulose.

#### Concrete Results of Dr. Herty's Work

The tangible results produced so far in the investment of \$100,000,000 in new mills which will create employment for approximately 50,000 people and will produce 1.500,000 tons of pulp annually, alone mean much to the industrial growth of the South and are a splendid tribute to the work of the Georgia Chemist.

It was fitting that the ceremonies of Florida Industries Day were held at

Top to Bottom-The wood yard with the plant in background. The cylinders in which the bark is removed from the logs. A group of the many large tanks necessary in pulp manufacture. Views of one of the beaters

Fernandina which has quietly been one of the most active of Southern communities in stimulating the South's new paper industry. With a population of only 5,-000, it already boasts two large pulp plants, one for the manufacture of kraft pulp and the other for rayon. As far back as 1933, the National Wood Fibre Growers' Association was organized at Fernandina, which has for its first objective the capture of our own forest products mar-

#### Container Corporation's New Plant

The Container Corporation of America's Fernandina plant is located about one mile north of Fernandina on the Amelia River, with a frontage of about 2.000 feet on the river harbor. The first unit, just completed, cost about \$3,000. 000. Two more units are planned, bringing the final plant investment to approximately \$9,000,000. The capacity of the first unit will be 150 tons a day. The pulp will be shipped to one of the Corporation's many fabricating plants or sold to other consumers. Steady employment will be given to at least 175 men in the plant proper. Two-hundred other men will be employed in procuring the pine which is used in manufacturing pulp paper products. An average wage rate of 47 cents an hour will be paid to common and skilled labor, and it is significant to note here according to Walter Paepcke, president of Container Corporation, that the company was in no way influenced to locate in the South because of lower labor costs. Their wage rates are determined by the amount a man produces and on this basis the wage scale is not affected by the locality in which their plants are established

Like many of the other new mills going up in the South, the Container Corporation has purchased 30,000 acres of forest land, with an option on much more. This will not be cut for current needs but will be farmed for turpentine and kept in reserve. Timber for operations will be purchased from farmers in the surrounding area, giving them the asset of another cash crop.

The Container Corporation of America is the largest manufacturer of its kind in the world. Of all the kraft produced in this country, 45 per cent goes into paper board and of this Container makes 10 per cent. Pulp wood can be brought to the Fernandina plant by railroad, highway or barge. Artesian wells

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#### it to Doctor Herty at Container Plant

drilled to a depth of slightly more than 1,000 feet afford an ample supply of water for plant operations. Excellent railroad and water transportation facilities make the raw pulp quickly available to the Company's paper board mills in the North and Middlewest.

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manufacturer. In its supply of pine pulp wood which can produce cellulose in abundance, and its mineral wealth consisting largely of non-metallic minerals, a great development of new industries may be foreseen.

#### Dedicated to Dr. Herty

The formal ceremonies dedicating the plant and unveiling a plaque of Dr. Herty which were the occasion of Florida Industries Day at which Governor Fred P. Cone was the host, were held at the plant. There were speeches by Secretary of Commerce, Daniel C. Roper, Governor Cone, Senator Claude Pepper, James G. Stahlman, president of the American Newspaper Publishers Association: Walter P. Paepcke and Dr. Herty; all of which were broadcast to the country over a nation-wide radio network.

#### The Future of Southern Pine

Mr. Stahlman pointed to the faith of the nation's press in the development of Southern pine newsprint, saying "Southern publishers have shown their faith on three different occasions by signing fiveyear contracts for more than 60,000 tons annually of newsprint that had never been made, in mills that had never been built, by men whom nobody knew." He predicted that within the next decade or 15 years, the South will see kraft, newsprint, rayon, cellophane and collateral industries using Southern pine with an annual turnover of not less than \$1,000,-000,000.

The new pulp mills at Fernandina will depend mainly for their wood supply on timber grown in Florida Unit No. 1 which, according to the South's Forest Service Survey, contains an acreage of 7,378,900 on which there are 31,599,000 cords of pulp wood available. Southern nine land can be farmed to produce between one and one-half cords of new wood per year. By conservative estimate, then, Florida Unit No. 1 can be farmed to produce more than 7,000,000 cords of pine wood a year without depleting the present stand-or more than enough for 30 plants like the one for Container Corporation at Fernandina.

#### Florida's Industrial Wealth

While Florida is not generally known for its industrial possibilities, it does possess many raw materials awaiting the call of the chemical engineer and the

#### Products Supplied for Container Plant at Fernandina

Among the large number of firms that supplied equipment and materials for the construction of the Container Corporation plant at Fernandina. Fla., are the following:

Howing:
Alexander Brothers—leather belting
Babcock & Wilcox Mfg. Co.—Tomlinson recovery and B & W power boilers
Baldwin Southwark Co.—pulp baling press
Balley Meter Co.—meters
Beloit Iron Works—pulp machine
Buffalo Blower Co.—Jans
Chicago Bridge & Iron Co.—digesters, diftwers tanks wing nine and track

fusers, tanks, swing pipe and track, cyclone, sprinkler tank ane Company—valves and fabricated jusers, tanks,

piping

Company—clarifying & causticising system Edward Valve Co.-

Falk Engineering Works—couplings Fairbanks Morse Co.—scales General Electric Co.—motors and trans-

formers
Gould Pump Company—pumps
Graver Tanks Works—tanks
Ingersoll Rand Co.—pumps, air compressors
Jeffery Manufacturing Co.— salt cake
feeder, chip bin gates & chutes, wood,
bark, and chip conveyors
Jenkins Bros. Co.—ratees
Johns-Manville Co.—insulation
Jones & Laughlin Steel Co.—structural
steel
Lyboyr Co.—duck liquer, nowns

steet LaBour Co.—black liquor pumps Lunkenheimer Company—ralees Ohio Locomotive Crane Co.—diesel track

Philip Carey Co.—roofing materials and

insulation

insulation
Reading Chain & Block Co.—crance
Sherwin-Williams Co.—paints
Stephens-Adamson Company—Redder conveyors for salt cake system
Sturtevant, B. F., Co.—blowers and fans S. Rubber Company-rubber belting and

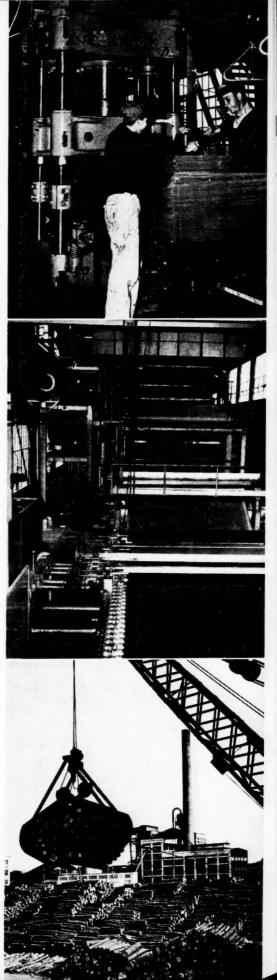
fire hose S. Steel Corp.—structural & reinforcing

1. S. Steel Copp.—structural & reinforcing steel, Atlas portland vement Viking Company, The—sprinkler system Walworth Company, The—ralves Westinghouse Electric & Manufacturing turbine, switchboard, motors, motor con-trol equipment, buttery charging station, synchronizing equipment, cable, wire and conduit onduit

Patent Crusher Co.--salt cake

Worthington Pump Company—pumps Yale & Towne Company—hoists

Top-The sheets of pulp are subjected to hydraulic pressure to remove the surplus water. Center-The pulp is made into sheets. Bottom-4 grapple at work in the wood yard



#### A Discussion of Wage, Hour, and Farm Control

OUR hearts are charged with desires, and our brains are aflame with ideas, for improving the lot of Americans on the farms and in the cities.

Because we are impatient with the progress we have made through the free activities of our millions of citizens, we seek to speed our climb to a higher scale of living by the only untried device available, namely, federal legislation.

We progressively want more and more. We have found new materials and methods, and because of the urge that comes from a desire to serve mankind and the desire for personal gain, and even acclaim, we have been diligent in their use. We have succeeded beyond the dream of kings of a few decades ago and beyond the achievements of any other people.

In the face of this record, we desire to play with the two-edged tool, federal legislation. If in using this new tool, with which we are not familiar and for which technique of use has not been discovered, we lay aside the other well known tools with which we have accomplished so much or, not laying them aside, cease assiduously to ply them, we should most logically expect to do less work, to produce less and so, inevitably, to sink to a lower scale of living.

Because we cannot duplicate the fine work, the intense interest, the sacrifice of leaders that have made us great, while we deliberately discourage those most able to serve humanity—and because laws, which attempt to substitute mandatory requirements for natural incentives, are usually harmful, doing good only as they stimulate productive human activity—such federal legislation in the field of ordinary economics can have no effect upon our scale of living except to lower it.

If such restrictions could improve the lot of the most lowly, even at the expense of the average and definitely at the expense of the most favored, they might be justified. But hampering the leaders can never improve the lot of the fellowers, because it is the work, the spirit, the skill and the intelligence of the most capable that lift us all above the level which we could attain if not so aided.

With these thoughts in mind, I should like to discuss two proposals now being put forward. These proposals are presented separately, whereas I shall deal with them together, because—as is the almost universal case with such federal legislation—they so join in affecting our



B. C. Heacock

President, Caterpillar Tractor Company

society as to preclude constructive consideration of them one at a time.

In discussing the effect of these proposals. I believe that it will become increasingly clear that any incursion into the economic field must be felt throughout the entire economic field and that as we seek to artificially benefit one segment it can only be done at the loss of another. The more we artificially direct the participation of our people in the evolution of our economic processes, the more we insist upon the acceptance by our people of those services and goods which a planning authority, a law-making body or a person, thinks they should have and the more we deny our people the opportunity to indicate, by their patronage in free markets, what goods and services they really want from our productive activities.

The two proposals to be discussed are Federal Control of Agriculture and of Wages and Hours.

Accepting as a rough measurement of fact that only six bales of cotton out of every ten produced in America can be used in the domestic market, it seems that we are currently raising too much of the world's cotton. A substantial portion of our free export market appears to be gone permanently. The most obvious proposal is therefore to subsidize

cotton which enters either the export or the domestic market, or both.

A method I hear discussed frequently is the payment of a bonus on domestic consumption after having marketed the cotton at the world price.

Another method is to pay cotton growers to just bide their time and raise nothing.

Subsidizing the disease instead of subsidizing the cure is what we do when we subsidize that part of the cotton crop which cannot find a profitable free market. What we should be doing courageously is to allow the economic pressure of too much cotton to force out of production those cotton acres on which cotton can be grown least effectively and to leave in production those cotton fields that serve the nation best. If, as a result of doing this, hardships to citizens follow, it would seem to make sense to subsidize a cure rather than through subsidy to perpetuate the evil.

A question to consider is, "What happens to the *citizens* of this nation when economic pressure forces them to stop raising cotton or, for that matter, when government subsidy encourages, or government edict commands, the retirement of cotton acreage?"

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Without pretending to know all conditions in the several cotton growing regions of the nation, I do know from personal observation that negroes and cotton go together in much of the South and that there are many millions of our citizens involved in the cotton situation in this manner. Negroes and cotton simply go together and if a few acres of cotton are retired on any cotton farm. a negro family leaves the farm. While it is true that under the subsidies which have been paid to cotton farmers, the farmer agrees not to move the negroes off the place, the fact remains that, unless there again be slavery, the negroes are at liberty to leave the farm volun-

The further fact remains that when the farmer does not raise cotton (and unless he has signed away his freedom to the Federal Government), he does not keep the negroes, and even if he has so signed, the negroes may leave voluntarily and will perhaps be encouraged to do so.

In either case, the answer is the same—less cotton, fewer negroes.

Economic pressure is, as a matter of fact, forcing diversification on a lot of the Southern cotton land and would, in

(Continued on page 56)

#### Republic Steel Spends \$2,000,000 in Alabama

Former Gulf States Steel Plant Being Expanded

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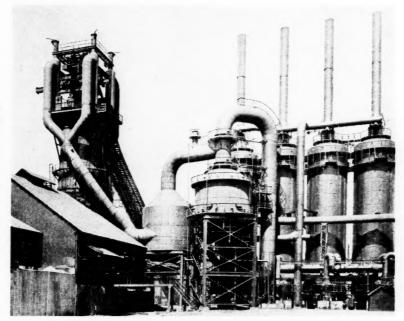
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THE Republic Steel Corporation's expansion and improvement program now under way in the Gulfsteel Division plant at Gadsden, Alabama, will cost altogether about \$2,000,000, and increase the ingot capacity of the open hearths from 28,000 to 50,000 tons per month.

Improvements being made in almost every department of the plant include construction of two 150-ton open hearth furnaces, an ingot-mold yard and stripper building, and extensions to the hot mill, furnace, plate distributing, pickling, boxannealing and warehouse buildings.

The new ingot-mold yard and stripper building is now being erected. It will be 55 by 312 feet, and located adjacent to the pit side of the open hearth building. In the latter building, there will be the necessary ladles and slag cars to handle molten steel and slag, and a 210-ton crane in the pouring aisle, a 75-ton crane over the charging floor, and a new 7½-ton floor charging machine.

The 150-ton ladles will have two stopper rigs so that two ingots can be poured at the same time. Capacity of the slag pot will be 370 cubic feet. The stripper crane will be moved from the soaking pit building to the new ingot mold building where the ingot-stripping will be done. There will also be a 15-ton crane in this building for such light crane work as handling of hot tops.



Thomas No. 2 Blast Furnace, Birmingham, Ala.

A second pickling unit and a late type galvanizing machine to deliver sheets at the rate of 150 feet per minute will be installed. The hot mill train will be extended and an additional 1,800-horse-power gear unit installed. Four stands in the cold mill are to be moved to the east end of the box-annealing building and a new two-high mill installed. A new three-high mill will replace one of the old two-high mills. Two pack-heating furnaces of the double chamber type, each 55 feet long, will feed the two-high

mills. At the last hot mill stand a return conveyor is to be built to take packs from this mill directly to the back of the furnaces for the final pass.

The improvement program entails considerable incidental rearrangement, and involves important additions to power lines, conveying and heating facilities, railroad track layout, and so on. A new two-story fireproof office building, 42 by 122 feet has already been completed.

Practically all excavation at the open (Continued on page 60)



Thomas Sintering Plant with blast furnaces in background

# To Carry on the Standards of Workmanship

Apprentice Training at Brown & Sharpe Mfg. Co.

BY

W. A. Viall

Vice President, Brown & Sharpe Mfg. Co.

WE have been hearing a good deal of late about the shortage of skilled labor. This condition exists in various lines of industry, but the one that particularly interests the writer is the machine tool industry. Skilled mechanics have been lacking, and also leaders trained in the details that go to make the best type of leaders.

There are firms in the industry that appreciate the necessity of doing something to educate workmen who will carry on the standards of workmanship that the industry demands.

The Brown & Sharpe Mfg. Co. was founded by Messrs. Joseph R. Brown and Lucian Sharpe, both of whom had served apprenticeships; and from the earliest days of their partnership in 1853 they took on apprentices and the foundations they laid have been built upon by their followers until we now have a system that has worked well, as attested to by the large number of men that have gone through our shops, and have taken responsible, leading positions in all parts of the world.

There is a misconception, in the minds of many, as to what apprenticeship is. In the heavy demand for skilled workers men have been trained in special lines of work, becoming skilled in one line only.

An apprentice, defined by Webster, is "one bound by legal agreement to serve another for a certain time in consideration of instruction in an art or trade."

In our shops, with about 175 apprentices, we have a director of apprentices and assistants who devote their whole time to this work. While the director and assistants plan the schedules and do the class-room teaching, the shop instruction is under the direct charge of the foremen and sub-foremen in the shop. Our thought is that the foremen should be the teachers, and the apprentices should learn under the regular shop conditions where quantity as well as quality is required.

The selection of the young men to take the courses is an important element. Candidates are interviewed by the director. We require at least a grammar school, and prefer a two-year high school training. By questioning we learn something of the inclination of the applicant. We also know something of his school record. Receiving the approval of the director he is entered on a trial period of three months, provided he passes the physical examination.

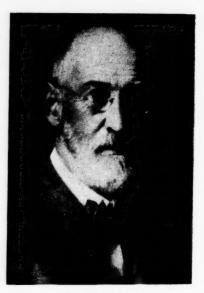
At the end of three months, if it proves that the young man has a good record he, his parent or guardian, and we sign an agreement covering the term of his apprenticeship. In the case of the machinists it is four years, and the agreement is coupled with a payment of \$50.00 by the apprentice. At the completion of his term \$150.00 is paid him in addition to the wages he may have earned during his term of service.

We include the trades of machinists, pattern-makers, moulders, core-makers, and draftsmen. The young man is taught the use of the various tools in common use in the shops. Later he is taught the assembling of the types of machines he has been working upon. Toward the close of his service the apprentice is put upon the type of work for which he has shown a special liking or aptitude.

During the time of service the apprentice is paid wages that are sufficient for him to take care of himself.

While he is training hours are taken for class room work. This work includes the application of mathematics to shop practice, and now an elementary electrical course is required as late developments in the industry look more and more to electrical devices.

The management believes it has a duty toward these young men over and above their shop and class room requirements. As the homes of our apprentices are scattered from Maine to California,

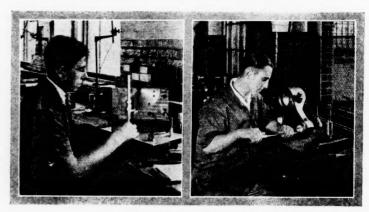


W. A. Viall

we have provided dormitories where we accommodate about sixty. We foster outdoor sports and rival teams are established among the members of this group of our employees.

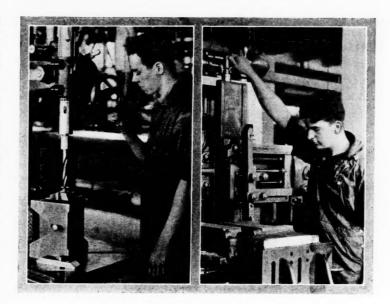
In addition to the facilities offered in our shops and classes, the young men have access to a good Public Library. The Rhode Island School of Design offers classes in drafting and designing that add much to the rounding out of a training of mind.

When they have completed their courses, most of the graduate apprentices remain with us. During the latter part of their term of apprenticeship we endeavor to learn the type of work for which the young men are fitted. The



various types of work that demand trained men consist of tool-making, general shop work, demonstrating and outside work on our product, sales work, and not the least of opportunities is work in the administrative department. In this latter line they start as subforemen and are advanced as their ability develops and opportunity offers. A large number of the foremen of our plant are apprentice trained, and our executive staff is comprised of men who have been apprentices or who have had thorough shop courses covering the lines the indented apprentice goes over.

About a year ago we made a careful canvass to learn where our former apprentices were located and what they were doing. It was interesting to note that the men were located not only in this country, but in foreign countries. While many had not remained in mechanical lines, it was evident that the training as apprentices, under a well directed plan, had had its effect in directing the lives of these men.



#### Paper Mill and Other **Activities Bring New Life** to Port St. Joe

month of the first steamship to use the new harbor facilities which have just been completed. The steamship "Tropic Star," a 9,200 ton vessel, picking up a pilot at daylight, proceeded into St. Joseph's Bay, then through the deep water channel, which had been dredged under the direction of Army Engineers, to the new and modern 4,000 foot City and Paper Mill Dock where she berthed a few hours later. The dock has 30 feet of water at mean tide, and shipping interests agree in the opinion that the facilities now available for deep water shipping are among the finest. The "Tropic Star" carried a cargo of 3,000 tons of salt cake from Tocopilla, Chile, consigned to the new \$7,500,000 paper mill which is rapidly nearing completion.

The arrival of this steamship brought memories of the time when Port St. Joe was one of the most active ports in the United States, when the first railroad connected the waterway of the Apalachicola River and Lake Wimico to St. Joseph's Bay, carrying cotton, lumber and naval stores for export through the Port of St. Joe. With the advent of large modern steamships the port facilities proved inadequate and Port St. Joe lost her place as an important point in the matter of world commerce. No vessels have called

Port St. Joe celebrated the arrival last there for many years, until the "Tropic Flint Rivers, Port St. Joe bids fair to re-Star" arrived recently. With the improved harbor, modern docks, adequate rail facilities, the canal which will connect St. Joseph's Bay with the Inter-Coastal canal and the proposed improvements to the Apalachicola-Chattahoochee

gain her place in international commerce.

Only a year ago, Port St. Joe was a sleepy town of 500 inhabitants. Then the DuPont-Mead interest started construction of a paper mill which is to produce (Continued on page 58)

The "Tropic Star" arrives at Port St. Joe



FEBRUARY NINETEEN THIRTY-EIGHT

#### Large Scale Housing As a Sound Investment

C. V. Starrett

THROUGH the fog of Utopian theories and political claims that today beclouds the road to housing progress, the six-year experience of the Chatham Village demonstration in Pittsburgh throws a clear-cut beam of light on at least one sound path that leads toward the future of housing in America.

Group housing can be built and operated successfully on a large scale—at an economic as well as a social profit—if it is planned as a long-term investment, built to last, rented to the right people, and wisely managed. It can be done; for it has been done, in Pittsburgh and elsewhere.

First of all, it should be understood that the Chatham Village experience answers only certain phases of the housing problem. It does not show how to replace slums with low-rent housing on costly land. It does not show how modern housing can be built and rented to relief clients at a profit. It does not provide an answer to the whole problem of rehousing a badly housed nation at no cost to anyone. These phases of the problem still remain in the realm of blueprints and oratory.

But Chatham Village does demonstrate (1) That large scale group housing offers excellent possibilities for the longterm investment of large blocks of capital, at a moderate but secure return of at least five per cent;

(2) That planned neighborhoods can be built to the economic advantage of the investor as well as the social advantage of the community:

(3) That such neighborhoods can be better planned and better built than neighborhoods developed by speculative or individual builders;

(4) That neighborhoods owned and managed as a unit can be maintained over a period of years at a blight-free level of productive efficiency;

(5) That group housing can be rented (and kept rented) through such periods of financial stress as the recent depression, to families of a high type—the salaried business and professional class whose social and economic stability is a distinct asset to the neighborhood and to management.

In short, the Chatham Village project in Pittsburgh points the way toward good Chatham Village Demonstrates the Socially and Economically Profitable Use of Funds on a Long Term Basis

housing for the white-collar group as a sound business proposition for capital that is satisfied with a reasonable and secure return over a long period of years.

Chatham Village was built in 1932, after Charles F. Lewis, Director of The Buhl Foundation, had given several years to the study of housing needs in Pittsburgh, of middle class housing in Pittsburgh, of group housing developments elsewhere in America and abroad, of large scale building practice, site planning, and row-housing design. The success of Chatham Village is therefore no ficke, for it rests securely on a basis of straight thinking and sound planning—before the project was begun, during the construction phase, and through almost six years of operating management.

Construction costs, in Chatham Village, averaged \$6,700 per home unit—\$1,200 for land and \$5,500 per house. Building costs averaged 30 cents a cubic foot in the first unit, and 33 cents in the second, which was built four years later.

Maintenance figures show that of the Chatham Village rent dollar, 20 cents goes for taxes, 17 for house and garden maintenance, 11 for management, insurance and contingencies, 11 for amortization, while 41 becomes net yield. Rents are based approximately on 1 per cent per month or 12 per cent per year gross on the total investment. Deposit in the amortization fund is at the rate of 1½ per cent of the total building cost, with what is earned as interest added and compounded semi-annually at an annual rate of 4½ per cent. This method will pay off the fund in approximately 31 vents.

In the spring of 1932 the first unit of 129 homes was occupied by tenants who had signed their leases during the preceding winter, while the Village was still "in the mud." Since then the property has been productively occupied, with a waiting list of prospective tenants at all times. During the worst depression years, productive occupancy averaged better than 99 per cent. Since 1936, when a second unit of 68 homes was opened, the total of 197 homes has had a record of 100 per cent occupancy.

Rents were established to yield an average of 5% per annum after all charges.

Aerial view of the Buhl Foundation's housing project at Chatham Village, Pittsburgh, Pa.



The total investment now represents some \$1,600,000 of the principal funds of The Buhl Foundation. It should be emphasized that the Chatham Village development is in no sense philanthropic, but a solid investment. The Village serves a socially useful purpose, it is true, but it is first of all an investment that yields a secure and deliberately limited return which then goes back into the philanthropic program of the foundation.

Tenants come to the Village, and stay there—and bring their friends to fill the rare vacancies—because they get more for their rent dollar than elsewhere. (The average rent per room now in effect is \$10.70.)

On the other hand, the Village can give its residents more because those who designed it took advantage of large scale planning and mass building economies to make these homes unusually attractive to residents. And the grounds, gardens, and woods were laid out and developed on a spacious, neighborhood scale.

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Unusual features of Chatham Village are too numerous to list, but here are a few:

Houses turn their backs on the streets; they face the large garden courts, so that children play in safety in courts never entered by auto traffic.

Electric and phone wiring is all concealed underground, as are garbage cans. The Village has no backyards, no alleys, no trash, no dumps,

Village homes are equipped with the best of modern equipment: economical, individual heating plants (steam, with gas furnaces); built-in metal kitchen cabinets; stove domes with ventilating fans; porcelain sinks with stainless metal splashboards; tiled bathrooms with both shower and tub; and complete household laundering facilities, including portable clothes-drying reels that are taken in when wash day is over.

A summer playschool is provided, gratis, for children. There is a winter nursery-school. A community clubhouse is the center for a dozen social activity groups organized and operated by the residents.

Laid out like a park, Chatham Village is also semi-encircled by a 25 acre belt of virgin timber that has been made into a natural park, with trails for hiking, picnic grounds, water gardens, and native wild life.

Near the heart of a great city and Lut six minutes by auto from the downtown business district, the Village lies just beyond the crest of the river hills, out of the smoke belt, facing the open country.

Management and maintenance are consistent, continuous, and careful. Tenants are selected with reasonable care, but there is no paternalism in the



Chatham Village houses turn their back on the street and face a large garden court.

management-resident relationship. A maintenance crew is on constant guard against weather, wear, and accident to buildings and grounds. Painting, plumbing, and other repairs are kept up to the minute, for "the Village is regarded as a farm, to be improved—not a mine, to be exploited."

The landscaping becomes more lovely with each year's growth. The pictures tell the story of fine trees, well kept lawns and shrubbery. They also help to explain the occupancy figures—and the waiting list.

To summarize: Chatham Village points the way to solution of one major phase of America's housing problem. It demonstrates the advantages of planned reighborhoods over speculative, haphazard housing "built to sell" and often sold to families who should not undertake to buy even jerrybuilt homes. It demonstrates that large blocks of capital can be thus invested to produce reasonable, assured dividends—with security of principal—and with advantage to the community as a by-product.

Sooner or later there will be many more such villages in the United States and the South will have its share. Those who build and operate them will, perhaps, find something of value in the record of the pioneering done at Chatham Village, in Pittsburgh.

#### Bethlehem Launches S. S. quarters and mess rooms. "R. W. Gallagher" Among interesting safe five independent radio rec

Unusual interest was centered in the matic S.O.S. launching of the R. W. Gallagher at the finder and con Sparrows Point, Md., plant of Bethlehem equipment, on Shipbuilding Corporation, last month.

A The vessel, a tanker built for the Standard ard Oil of New Jersey, is named for the to company's vice president and treasurer, mb-R. W. Gallagher, who has charge of Standard Oil's natural gas interests, Mrs. is a Gallagher was the sponsor.

The R. W. Gallagher is the 318th vessel, and the 42nd tanker launched at Sparrows Point. It is the second of a series of four single screw 13 knot tankers of 13,000 tons deadweight capacity to be built for Standard Oil at this plant. In addition, Standard Oil has ordered three twin screw, 18 knot tankers of 16,300 deadweight tons capacity to be constructed at Sparrows Point.

The ship has an overall length of 463 ft., a moulded breadth of 64 ft., designed to carry 106,400 barrels of oil on a draft of 28 ft. 4 in., while the tank space is divided into 24 compartments with pumping capacity adequate to load or unload the ship in less than 12 hours.

The propelling machinery consists of a single screw installation of Bethlehem steam turbines, 3500 shaft horsepower. Steam is supplied by two water tube oil burning boilers.

An outstanding feature is the fireproof construction of the quarters for officers and men.

Because the ship will operate in warm climates sufficient ventilation has been provided to insure fifteen complete changes of air every hour in all living quarters and mess rooms.

Among interesting safety devices are five independent radio receivers, an automatic S.O.S. receiver, radio direction finder and complete radio communication equipment, one set of which has a range of 2000 miles.

#### **Developments in Electrical Equipment of Materials**

Handling

R. H. Rogers

A s the result of a much greater demand for material handling equipment of all types, many innovations in the application of electric apparatus have been introduced recently. While relatively little new electric equipment was designed specifically to meet materials handling problems, the installation of larger and more complex systems neves sitated the development of new and more flexible schemes of control. Among the various materials handling installations of this nature were a new car dumper at Huron, Ohio; a 52,000 yard conveyor at Grand Coulee Dam; a new extensive system of belt conveyors in an iron mine; a continuously operating skip hoist in a steel mill; and the largest and one of the fastest mine hoists in America. In addition, electron-tube rectifiers were successfully applied to elevator service.

#### A New Car Dumper

A variable-voltage car dumper equipment, built for the Wheeling & Lake Erie Railroad, is the most powerful yet constructed. It is of the lift-and-turnover type and will handle an average of fifty 120 ton cars per hour. The electric equipment is conservatively designed to

#### Lift and turnover car dumper





Pivoted bucket carrier operating over coal bunker

on a continuous basis, and is arranged so flexibly that the dumper can still handle the maximum load even though a major piece of electrical equipment should fail. Wherever possible, the plant has been made automatic in operation.

#### Skip Hoist for Blast Furnace

The installation of two new skip hoists for blast furnace service by a large steel company marks the first use of three-field generators with variablevoltage control with such equipment. In the case of each of these hoists, the electric equipment consists of two threefield generators and two shunt-wound motors. The sloping-speed characteristics of the equipment enables the two motors to be run each off its own generator, thereby limiting the maximum voltage to the voltage of one generator. A new scheme of controlling the fields has been developed to give substantially constant low speed, regardless of the kind of load being handled, while the hoist is dumping into the furnace.

#### 52,000 yard Conveyor for Grand Coulee Dam

To excavate 13,000,000 cubic yards of earth in getting down to granite, a continuous conveyor system more than a mile long was built at Grand Coulee Dam. This conveyor carried approximately 52,000 cubic yards of material per day from the site to a distant canyon. Twenty-five 200 hp motors operated the individual conveyor sections, which ranged from 200 to 275 feet in length.

<sup>1</sup>Industrial Engineer, General Electric Co.

handle the full capacity of the dumper Operation of the system was electrically interlocked so that a stoppage of any one section automatically stopped all other sections on the incoming side. The contractors estimate that 60 per cent of the cost of moving the soil, was saved

#### Conveyor System for Iron Mine

An iron mining company recently put into operation an extensive system of belt conveyors to assure a continuous flow of ore from the deposit to a railroad shipping pocket 4,500 feet away. The total vertical lift involved is 386 feet. It is believed that this sytem is the largest used for iron ore mining and one of the most extensive in the entire metal mining field. It handles a constant flow of 750 tons of ore per hour, moving at a rate of 500 feet per minute.

The system is made up of nine individual conveyor sections, each of which lifts and passes the ore upward until it is finally dumped into a 500 ton receiving pocket for loading into railroad cars. In each of the nine sections, a four-foot lagged driving pulley is connected through a semi-flexible coupling to a totally enclosed speed-reducer. The automatic control is also totally enclosed, oilimmersed, and the whole system is interlocked to assure proper sequence in starting and stopping. Thrusting brakes provide uniform deceleration and hold against run-backs.

At the first three stations on the conveyor, motor-driven tower-type excavators, with three-cubic yard drag scrapers, handle the ore. At the second three

(Continued on page 60)

Remodeling a Power

Plant

REATER engineering judgment frequently is required in the remodeling of a power plant than is required in the building of an entirely new station. Many factors must be weighed in determining the size of expenditure that will yield the maximum return on the investment over a period of years. Complicating the problem are such considerations as what proportion of existing equipment should be continued in service.

Circumstances such as these, were involved when United Cork Companies, manufacturers and erectors of cork insulation, transferred their manufacturing facilities from Lyndhurst, New Jersey, to Kearney, New Jersey.

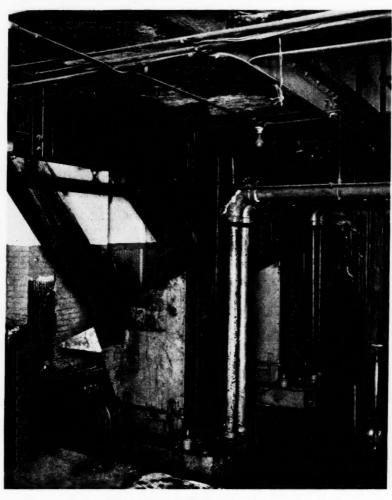
After taking into account the exigent factors, the engineers in charge decided that the existing steam generating units were entirely suitable provided proper fuel burning equipment could be installed. These units consist of two Keeler straight-tube vertically baffled boilers, each having 3,000 square feet of heating surface, and each having convection superheaters between the second and third passes. These furnaces were of the dutch oven type with flat hand fired grates. Draft provision was a radial brick chimney eight feet in diameter and 175 feet in height.

In this, as in other work factories, the major load is for steam, used in processing cork for the manufacture of insulation. A small amount of steam is used for heating. A certain quantity also is required as a standby for fire pumps during week-end shut downs.

The load cycle indicates only slight variations for six days of the week, with banked conditions holding pressure for the fire pumps over the week-end.

A survey of the fuels tributary to Kearney disclosed certain coals which, owing to their character, do not command a high price. These coals were thought to offer possibilities for the generation of low-cost steam, provided proper stoking equipment were selected for efficient and commercially-satisfactory burning. To the engineers, spreader-type stokers appeared to be most applicable and an investigation was made of plants using this method of firing.

Following this investigation, Iron Fireman Pneumatic Spreader stokers were selected and installed. The dutch ovens were removed and the floor line lowered to provide space for suitable furnaces.



The newly installed automatic stokers in the remodelled power plant of United Cork Companies

The type of stoker installed is made up of three major units: the coal-feeding, the pneumatic conveyor and the grate or burning sections. These sections combine to form an efficient system for the feeding, conveying and combustion of ordinary screenings or slack coal without special preparation, grinding or pulverizing. All particles of coal are thoroughly and effectively burned, with close regulation of air and coal supply.

The hopper, transmission and feed worm are the three important units of the coal feeding section. The transmission is a finely built mechanism, with numerous speeds and with an automatic overload release. High velocity air from a radial-vane fan picks up the coal in the transfer housing and conveys it through a conduit to the boiler. Foreign particles which weigh more than the coal fall to the bot-

tom of the transfer housing, where they can be removed readily through a cleanout door.

To prevent packing of damp coal, elbows are steam-jacketed. Steam for the elbows does not enter the coal stream and is used only at such times that coal is unduly damp.

The efficiently-designed spreader nozzle is made of high alloy steel to withstand the radiant heat of the fire. Adjustment for front and back distribution of coal over the grates is provided by elevating and lowering the nozzle tip. This adjustment is made by means of a convenient hand-wheel. Lateral distribution of the coal is obtained by deflectors in the nozzle tips. Dual nozzles are used in the Kearney plant to afford capacity and flexibility.

(Continued on page 58)

## Iron, Steel and Metal



## Market

THERE was very little change in the rate of steel production during the month of January. The operating rate fluctuated between 25.6% of capacity for the first week of the month to 30.5% of capacity for the week beginning January 31st, as compared with a rate of between 75 and 80% a year ago. The high point during January of this year was 32.7% for the week ending January 31st.

Iron and steel production in Birmingham was at a much higher level, continuing with little fluctuation at around 63% of capicity. Tennessee Coal, Iron and Railroad Company held at around 70% and will probably continue at that point or above throughout the first quarter. The outlook for steel in the Birmingham district still seems to be somewhat better than elsewhere. Small orders for sheets and iron products continue to come in and while current bookings are comparatively small, a number of inquiries are out for bars, plates and shapes. Since the first of the year most of the tonnage in Birmingham was for the re-building of jobber and dealer stocks.

General business uncertainty and pressure against present steel prices is affecting the trade with the result that buyers are holding off from current commitments. Large bookings of rail orders have been mainly responsible for Birmingham's relatively high rate of production.

The Missouri Pacific Railway has been authorized by the Federal Court at St. Louis to spend \$7,540,088 for improvements to road beds and equipment during 1938. In general, however, railroads are releasing very few orders for steel even against their normal maintenance requirements.

Government work continues to be a major item at present and in prospect in the construction field. A publicly financed bridge at Jacksonville. Florida will take 3,400 tons.

The proposed naval program will eventually require an estimated total of approximately 400,000 tons but steel orders will not be placed until specifications have been prepared and even then will be spread over a long period. According to a recent announcement of the Maritime Commission, the American Export Lines of New York has signed long term operating subsidy contracts with the Commission, agreeing to build 10 steel cargo ships in the next five years at an estimated cost of \$20,000,000. Four of the vessels will be started this year and offi-

cials estimated that each ship will require about 3,500 tons of steel each. The total number of ships on the Commission's proposed construction program now amounts to 87 for which the total cost has been tentatively estimated at \$200,000,000.

The output of iron ore in the U.S. in 1937 is estimated by the Bureau of Mines at 72,166,000 gross tons, an increase of 48% over the quantity mined in 1936. The rate of production was more than 21/4 tons per second for the entire year. The total for 1937 was the fourth highest on record and was only 4% less than the all-time high established in 1917. Ore shipped from mines in 1937 is estimated at 72,339,000 gross tons valued at \$208,-749,000, an increase of 41% in quantity and 58% in total value compared with 1936. The average value of ore at the mines in 1937 is estimated at \$2.89 per gross ton, while in 1936 it was \$2.56. Stocks of iron ore in the mines showed an increase of 6% over 1936 at the end of 1937, but were still at a low figure amounting to 5,741,000 gross tons. Iron ore output in the Southeastern states approximated 6,414,000 gross tons in 1937, an increase of 52% over 1936. Shipments amounting to 6,456,000 tons were valued at \$10,802,000, the average value of ore produced in the Southeast being \$1.67 per gross ton. Stocks at the mines were very low at the close of 1937, totaling only 14,000 tons compared with 56,476 tons at the end of 1936.

Imports of iron ore reported for the eleven months ending November 30th were 2,260,648 gross tons valued at \$5,435,116. This compares with 2,232,229 tons valued at \$5,280,197 for the entire year of 1936. Reported exports of iron ore for the eleven month 1937 period were 1,263,936 tons valued at \$4,037,823 compared with 645,284 tons valued at \$1,962,527 for the whole year of 1936.

Canada took virtually all the 1937 exports, while more than one-half of the imports came from Chile, according to statistics compiled from the records of the Bureau of Foreign and Domestic Commerce.

According to the Metals and Minerals Division Bureau of Foreign and Domestic Commerce, exports of iron and steel products, excluding scrap, totaled 306,647 gross tons in December valued at \$20,723,541 compared with 301,280 tons valued at \$22,871,417 in November. The lower value is due to small shipments in the higher priced brackets, principally tin plate.

Figures covering the origin of iron and steel scrap for export during the month of December, 1937, have now been published and for the South is shown in the following break-down by customs districts in tons: Maryland, 13,683; Virginia, 5,898; Florida, 12,195; Mobile, 5,651; Sabine, 13,676; Galveston, 7,034; San Antonio, 8,560.

According to preliminary estimates, production of tin for the year 1937 totaled 203,000 tons, an all time record according to the International Tin Research and Development Council. The 1937 figure compares with 180,000 in 1936 and exceeds the previous record established in 1929 by 7%. For the twelve month period ended November 1937, tin consumption in the U. S. totaled 85,924 tons, a gain of 18.9% over the same period in 1936.

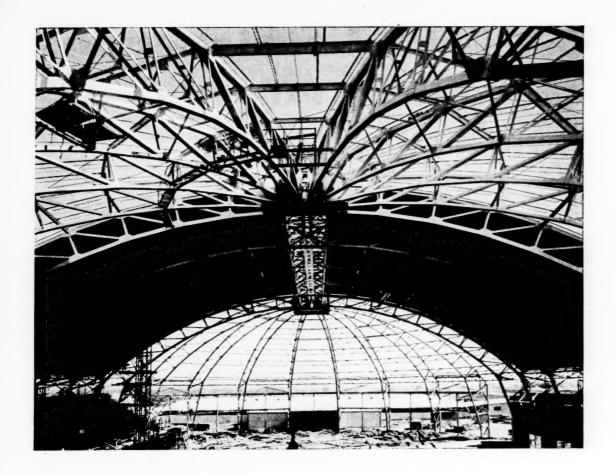
Inventories of semi-finished and finished steel at the mills of representative steel companies were about 7½% lower at the beginning of this year than in January 1937, according to reports issued by the American Iron and Steel Institute.

There is a greater supply of raw materials for steel making on hand, however, compared with this time last year, largely because substantial tonnages were accumulated before steel operations dropped late in 1937.

The U. S. Steel Corporation has arranged for loans totaling \$50,000,000, in anticipation of substantial outlays for new construction work now under way. This is the first financing undertaken since 1929 when it paid off all bonded indebtedness through an issue of common stock. Benjamin F. Fairless, president. recently testified before a Senate Committee that the company planned to spend more than \$80,000,000 in plant improvements and expansion in 1938 and that more would be allocated should conditions justify it. This is a part of a program under which about \$230,000,000 has already been expended.

During the years from 1928 through 1936 the U. S. Steel Corporation paid out \$15,000,000 more in taxes than its stockholders received in dividends. The Corporation paid \$2,502,000,000 in wages and \$379,000,000 in taxes. Or in other words, the taxes paid during the nine years 1928 to 1936 were equivalent to about 1-1/3 year's wages and salaries.

Republic Steel Corporation is spending approximately \$2,000,000 on plant improvement in the Birmingham area modernizing the former Gulf State Steel Plant at Gadsden, as described in an article elsewhere in this issue.



## Steel on Exhibition

As a part of its Centennial Program, the City of Fort Worth, Texas, built this magnificent coliseum for exhibition purposes and general community use. This building is 232 feet by 405 feet with a clear unobstructed width inside of 217 feet.

Wyatt C. Hedrick and Elmer G. Withers Architectural Co. of Fort Worth were associated engineers and architects.

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## Southern Construction Pace Quickens in

January

S PURTS in private building and road work carried the South's January contract total slightly above the December figure. The \$59,353,000 in work let for the first month of this year, however, is 19 per cent below that for the comparable month of 1937.

Private building construction is now running 20 per cent of the total, as compared with the 14.1 per cent of January, 1937. Road and bridge work comprised 18.5 per cent of the total a year ago and has now risen to 28.3 per cent. Public building percentages for January, 1937 and 1938, respectively, were 18.5 and 25.2. Industrial and engineering work, which a year back, made up 48.6 per cent of the month's construction, this January dropped to 25.4 per cent.

Private building is well ahead of the volume for the same period of 1937. So far this year, contract awards amount to \$12,404,000, or a 17 per cent gain. Much of this increase is due to hotel and apartment activity but gains were also recorded in bank and office work, church construction and in the residential field.

Highway construction is also leading January of 1937. Current records show the \$16,820,000 for last month to be 22 per cent ahead. Almost all of the Southern states were active in this field, with West Virginia, North Carolina, Texas, Missouri and Virginia in the lead.

While public building contracts slowed from the pace of December, they totaled nine per cent above the figure for the first month of 1937—the January, 1938, total

## Southern Construction by States

		Contracts
	Contracts	to be
	Awarded	Awarded
Alabama	\$922,000	\$7.924.000
Arkansas	1.383,000	6.667,000
District of Columbia	2,406,000	1.984.000
Florida	2.435,000	16.525,000
Georgia	2.235,000	8,923,000
Kentucky	1.530.000	12,686,000
Louisiana	3,436,000	27,413,000
Maryland	2.810,000	21,479,000
Mississippi	907,000	5,108,000
Missouri	4,793,000	14,780,000
North Carolina	4,456,000	11.531.000
Oklahoma	851,000	8.184.000
Conth Carolina	700,000	P 240 000

Total ...... \$59,353,000 \$289,160,000

for this class of construction was \$14,-998,000. More than one-half was represented by the various governmental projects, with the balance made up of school buildings.

The major declines were in industrial

and engineering work. Comparing the months of January, 1938 and 1937, the \$15,131,000 for the former is 58 per cent behind. The severe drop was in industrial contracts, although filling station work rose to \$406,000 bettering by more than 82 per cent that for the previous January.

Publicly financed engineering projects, which are included in the engineering total, however, showed a substantial increase in the drainage and dredging classification. The total was \$1,696,000, as against \$97,000 for the previous comparable month. Sewer and water projects are now practically one-half as active as they were a year ago. January's total was \$3,825,000.

One type of industrial project is expected to increase. This is the Public Works Administration-financed electric transmission, distribution and generating plant construction. On December 14 an announcement showed that 61 per cent of the \$146,917,000 P. W. A. electric construction program was located in the ten Southern states.

Private industrial construction is at a low ebb. Not since May of 1936 has it been lower. The January, 1938, aggregate of \$9,204,000 is less than one-third of the volume of industrial construction included in the contract award totals of January in the preceding year.

## Southern Construction Activity

GENERAL BUILDING	Contracts Awarded 1938	Contracts Awarded 1937	Contracts to be Awarded 1938	Contracts to be Awarded 1937
Apartments and Hotels	\$3,207,000	\$2,584,000	\$4,663,000	\$7,403,000
Association and Fraternal	45,000	288,000	225,000	250,000
Bank and Office	998,000	1,225,000	1,165,000	819,000
Churches	448,000	127,000	1,696,000	1,185,000
Dwellings	5,191,000	4.684.000	29,954,000	3,307,000
Stores	2,515,000	1,679,000	3,767,000	2,083,000
	\$12,404,000	\$10,587,000	\$41,470,000	\$15,047,000
PUBLIC BUILDING				
City, County, Government and State	\$7,679,000	\$9,749,000	\$21,016,000	\$30,410,000
Schools	7,319,000	3,993,000	11,462,000	10,132,000
	\$14,998,000	\$13,742,000	\$32,478,000	\$10,542,000
ROADS, STREETS and BRIDGES	\$16,820,000	\$13,787,000	\$151,556,000	\$127,245,000
INDUSTRIAL and ENGINEERING				
Drainage	\$1,696,000	\$97,000	\$10,327,000	\$35,702,000
Filling Stations and Garages	406,000	222,000	983,000	556,000
Industrial Plants	9,204,000	28,112,000	46,686,000	141,061,000
Sewers, Waterworks	3,825,000	7,634,000	5,660,000	15,185,000
	\$15,131,000	\$36,065,000	\$63,656,000	\$192,504,000
Total	\$59,353,000	\$74,181,000	\$289,160,000	\$375,338,000



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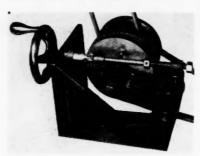
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## New Ways

## of Doing Things

## Speedmaster Variable Speed Transmission

The Speedmaster Division of Continental Machine Specialties, Inc., Minneapolis, Minn., has introduced a new infinitely variable speed transmission, giving exceptionally wide range. This "single unit" which gives a 6 to 1 variation of speed, is companion to another



Single unit variable speed transmission

SPEEDMASTER product recently announced, which gives a 40 to 1 variation. With a hand wheel for changing speeds, the new unit is completely self-contained and may be installed between the motor and the driven machine. It employs standard "V" belts.

## **Close-Coupled Motor Pump**

Known as Type II and designed for capacities up to 250 gallons per minute and heads up to 250 feet at speeds of 1750 and 3400 revolutions per minute, a new close-coupled centrifugal motor



Single Suction Centrifugal Pump

pump has been announced by Gardner-Denver Company, Quincy, Ill. Speed depends upon the required capacity and head. The pump is single suction, having a single stage enclosed impeller made of standard bronze, and is intended for all general pumping service. Pump and splash proof motor are mounted together to form a complete and compact unit which may be installed in any position on the wall, floor or ceiling, and either horizontally or vertically.

## Halsey Electric Water Cooler

Designed for efficiency and sanitation, a new 1938 line of Electric Water Coolers announced by The Halsey W. Taylor Company, Warren, Ohio, is of improved appearance and is made in capacities from 4 to 23 gallons per hour, using motors from ¼ to ¾ horsepower. The cabinet is



Water cooler designed for efficiency and sanitation

made of 17 gauge spot welded steel finished in gray lacquer and comes in sizes 18 by 18 by 40½ inches and 22 by 22 by 40½ inches. The compressor is of the slow speed large twin cylinder reciprocating type, set on rubber to reduce vibration.

## **Emergency Generator Set**

Designed to furnish power for large buildings when utility power is disconnected for periodical inspection and repairs of equipment, a 150 Kilowatt, 1800 R. P. M. emergency generator set has been developed by the Sterling Engine Company, Buffalo, N. Y., for the Phila-



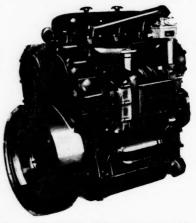
delphia Electric Company. The set consists of a Sterling Dolphin 6-cylinder gasoline engine of 240 horsepower at 1800

R.P.M., direct connected through a Sterling Thermoid Coupling to a 150 Kilowatt General Electric generator. Developed within weight restrictions of the Philadelphia City Street Department, the unit weighs 11.160 pounds, mounted on a lightweight structural steel skid for truck transportation. The engine, cooled with a Young Radiator, has six cylinders, bore 5% inches, stroke 6% inches, built with counterweighted crankshaft, dual valves in head, oil filters, electric starter, starting batteries and generator for charging them. The coupling is enclosed in the flywheel housing.

## Mass Production of Small G-M Diesels

With the opening of a compact and efficient plant designed exclusively for the production of high-speed Diesel engines on a mass production basis, the Diesel Engine Division of General Motors Sales Corporation, Cleveland, Ohio, has inaugurated the manufacture and sale of small, light-weight, two-cycle Diesel engines for all purposes which are designated as "little brothers" of the large General Motors Diesels that now power the famous mainline Diesel high-speed passenger trains.

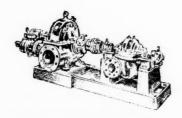
The company plans to produce the small model Diesel engines and generators in both stationary and portable types, extending the line in varying sizes down



to a one-cylinder 22-horsepower model. This will give the Diesel engine line of General Motors a range from 22 to 1200 horsepower, the engines being built in such manner that additional horsepower may be obtained by the use of additional units.

The engines will be built in three General Motors factories—at Detroit, Cleveland, and La Grange, Ill.—the Detroit factory, which has just been opened, to build the small size engines ranging from 22 to 160 horsepower. In connection with this factory, General Motors announces the opening of a new Diesel Test Laboratory, the largest and most completely equipped laboratory in the world for Diesel study exclusively.

## an Announcement . . .





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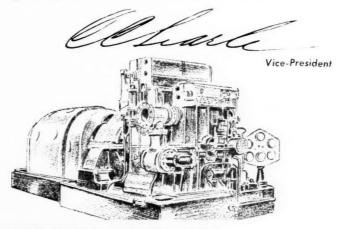
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It is the determination of both the Moore and the Worthington organizations to continue the steady progress of development which has characterized the policy of the Moore Steam Turbine Corporation throughout its existence. The fine reputation which Moore products enjoy in many industries, including Petroleum, Chemical, Public Utility and Shipbuilding, is based upon a standard of quality which will be maintained.



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## » » » Finance « « « « and kindred subjects

### Passion For Reform

There are so many things proposed and coming out of Washington to change over methods of doing business that one wonders what will be the next. The bill proposing an extra tax on closely held or what are known in some cases as family corporations is a recent one that has aroused a storm of protest. It is often said that every successful industry is the lengthened shadow of a man. To carry on the tradition of the founder has been a matter of pride to family and close associates who were trained through arduous lean years that they might carry on and make a constantly worthier product. Some of the great businesses of the world have had such a history. They would have failed long ago if they had not done a good job. Now it is proposed, because of the passion of misnamed reformers for changes, that this sort of business is to have a punitive tax levied against it. The big fellows are too big, profits of big and little are taxed when not distributed, regardless of needed plant expansion or surplus for a sure to come rainy day and now punishment for the "family" or "close" corporation. Share the wealth it seems is the objective. After that, what?

## **Prices And Wages**

We were told in 1933 the way to get out of the depression was to raise prices and raise wages. As wages went up it was believed the working man with more money in his pocket would demand more goods and be able to pay a higher price for them. The farmer got a subsidy too but he complained of finding prices in town had been advanced to a point that offset his extra income.

Now we are told prices are too high and must come down but wages must stay up.

That is different from the first plan but it won't work. When industry was going through the dark days of '31, '32, and '33, it used its surplus to keep its employees from want. It spent billions to do it while its operations were in the red but it can't do it indefinitely nor at present high wage levels or there won't be many jobs. Without a net return on the investment, small though it may be, no business can last.

If prices are to come down, and that should stimulate demand, costs must be reduced. We have had panics before and got out of them by recognizing that supply and its cost waits on demand. We have tried boot strap hoisting and it failed, why not face facts?

## Venture Money

If over large inventories were one of the factors entering into the recession, the fact that they are being reduced, which is undoubtedly true, should be a measure of encouragement. No doubt when the way looked clear buying for awhile went beyond a hand to mouth basis and there was apparent ground for it. To that extent, inventories contributed to the tie-up in production but while contributing to the slowing down they were not the main cause of the slump. We must look further for that. People stopped buying beyond necessities because of their fears of the future. "Venture money" is an apt expression, and the doubt that halts its outgo is felt by the industrialist who would like to expand his business as well as the worker and his wife who "fear John may be laid off."

## **Bank Holding Companies**

Senator Glass contemplates proposing to Congress a bill doing away with bank holding companies.

In this connection a United Press dispatch refers to a survey (Continued on page 48)

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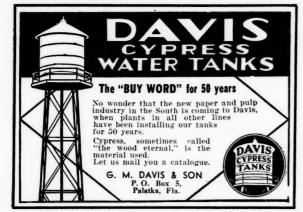
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Member Federal Reserve System

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## **Bank Holding Companies**

(Continued from page 46)

completed by the Federal Deposit Insurance Corporation which reveals that twenty-three bank holding companies control 400 banks with deposits of 6¼ billions or one-eighth of the total of 50 billion deposits in all banks. Senator Glass is reported as favoring a period of five years which holding companies would be given to dispose of their bank stocks.

### Doubt On Both Sides

While idle capital accumulates and bank reserves increase, as mentioned elsewhere in this column, the most casual thought will show that when business believes the go ahead sign is clear there will be investment in new enterprise and upbuilding work that will employ a large part of the idle and restore trade to more normal proportions.

One of the "small" business men called to Washington the other day to discuss the problems confronting modest enterprises said in his opinion "we must get rid of government fear of business and business fear of government."

It has seemed to business men that they have been regulated, restricted, reformed and taxed to a degree beyond endurance. Government evidently has believed business is responsible for most of our ills.

A meeting ground that will clear the way for private initiative is a consummation devoutly to be wished.

## Government Bonds in Banks

In the last week of January, New York member banks of the Federal Reserve System held over 3½ billion government bonds in their portfolios. Holdings of such bonds have shown a steady increase over the last three months.

The accumulation of idle funds is shown by the increase in excess reserves of all banks. Total of excess reserves in member banks is now nearing 1½ billion. While commercial loans lag the problem of investment of deposit money confronts the banker constantly.

While it is understood banks are permitted to carry in their statements government obligations at par, it is doubted that very many of the large banks carry them otherwise than at cost or market price whichever is lowest.

### Bank Deposit Insurance

The Federal Deposit Insurance Corporation's report for the last half of 1937 showed a net operating loss due to some banks of good size proving insolvent but notwithstanding the loss in the last half there was a net profit for the year. The total profit for the year was \$1,014,712 while surplus was increased from \$54,000,000 to nearly \$94,000,000. Since its beginning there has been paid out by the corporation to depositors of closed banks \$44,449,666, while 75% of this amount has been recovered from liquidated assets of the closed banks.

## Life Insurance Investments

During the last few weeks, life insurance companies have invested much more heavily in high-grade railroad bonds than at any time in the recent past. In the week ended January 22nd, for example, according to the Wall Street Journal, the total reached \$7,349,964 as compared with \$2,921,840 in the corresponding period of last year. For the first three weeks of 1938 purchases of railroad bonds were slightly behind a year ago but this is due in large part to the fact that the total funds invested are much less than in the same period of 1937. Investments in all classes of securities in the first three weeks amounted to \$87,626,338, compared with \$133,730,321 in the same period last year.



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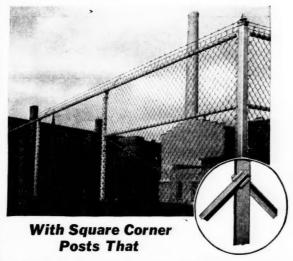
Docks for Ocean Vessels

American Creosote Works, Inc. New Orleans, La.

Atlantic Creosoting Co., Inc. Norfolk, Virginia

Plants at: New Orleans; Winnfield, La.; Louisville, Miss. Savannah, Ga.; Jackson, Tenn., and Nerfolk, Va.

## Stand the



## CAN'T BE CLIMBED

THERE are no straps or rings on the outside of Anchor's SQUARE Corner Posts to give foothold for climbing. Fabric is held to posts by special hooks bolted from the inside, and cannot be detached from the outside. Better looks, better protection-an exclusive advantage for Anchor Fence owners.

As permanent as the U-Bar line posts is Anchor's exclusive method of keeping them fast in the ground with deep-driven "anchors." In hard ground or soft . . . sandy or rocky . . . frost and thaws, stress and strain won't weaken them. That's why an Anchor Fence won't come loose, won't get out of line.

And to complete the rugged protection of Anchor Fences are ANCHOR GATES, The frames of Anchor Gates are of square tubular steel-for

strength. They are inseparably buttwelded-for rigidity and permanence. Disfiguring diagonal braces are unnecessary; Anchor Gates won't sag, drag or warp. They always swing free and lock tight. Like all the features of Anchor Fences, they can "stand the rap" of time and hard knocks. Anchor Fences are made in many styles for every purpose-industrial, residential and institutiona!. Nationwide Erecting Service insures efficient installation

Get This Free Book-Handy 48-page illustrated reference book tells you quickly all you need know about fencing-helps you select the type fences and gates to guard your plant best, look better, last longer, save needless upkeep. Busy executives need this book. Write for your free copy today.



## MAIL COUPON TODAY

Anchor Post Fence Co., 6622 Eastern Ave., Balto., Md. Send me free Specification Manual of Anchor Chain Link and Iron Picket Fences and Gates for industrial protection. Also local address of Anchor Nationwide Erecting Service.

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FEBRUARY NINETEEN THIRTY-EIGHT

## INDUSTRIAL NEWS

## U. S. Steel Convention Exhibits

U. S. Steel Convention Exhibits
At the 1938 hardware conventions, the
United States Steel Corporation Subsidiaries
will feature a moving exhibit incorporating
a hardware store with the figures of customers who have purchased such steel products as fencing, roofing, sheets, nails, etc.
The following subsidiary companies will be
included in this display: American Steel and
Wire Company, Cyclone Fence Company and
United States Steel Corporation Subsidiaries.
At lumber and building supply dealers conventions, the Subsidiaries will exhibit a moving scene showing robot consumers carrying
cement and steel products from a store to
buildings where cement and steel construc-

tion is used. Subsidiaries participating will include American Steel and Wire Company, Universal Atlas Cement Company, and United States Steel Corporation Subsidiaries.

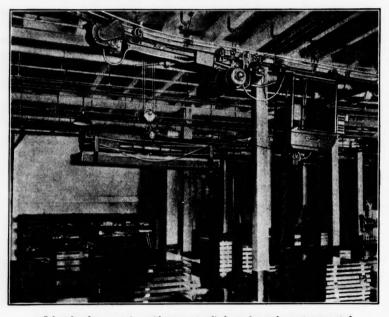
## Plymouth Locomotive Sales Manager

George Kirtley, formerly assistant to the vice president of Plymouth Locomotive Works, Division of The Fate-Root-Heath Company, Plymouth, Ohio, has been appointed sales manager of the Locomotive division. Roy J. Johnson, formerly assistant chief engineer, has been named assistant sales manager.



## Serving Every Industry

from light loads in the food and textile plants to heavy loads in the metal working industries.



 A low headroom carrier with power to climb grades and a motor operated grab are features of this sheet steel handling installation. Some results have been reduction in aisle space, higher piles, more tonnage per square foot of floor area and one man control of storage operations.

Consult your phone directory under Cleveland Tramrail.



THE CLEVELAND CRANE & ENGINEERING CO. 1145 Depot St. WICKLIFFE, OHIO

## Fairbanks-Morse Move Chicago **Ouarters**

After occupying quarters at 900 South Wabash Avenue, Chicago, Ill., for three decades, Fairbanks, Morse & Company have moved to the remodeled and newly named Fairbanks Morse Building at 600 South Michigan Avenue, where it will occupy the five lower floors. This property was formerly the Harvester Building.

## Jost Made District Manager

Equipment Corporation of America, Chicago, Ill., announces that Marshall E. Jost, sales engineer in the Chicago office of the company, was recently made District Manager in the Philadelphia office. Mr. Jost is well informed in the construction equipment field.

### Will Handle Republic Rubber Products

The Shook and Fletcher Supply Company, Birmingham, Ala., specializing for many years in equipment for the power, chemical, steel, mining and allied industries, announce they have added a full line of industrial rubber products manufactured by Republic Rubber Division of Youngstown, Ohio, a unit of Lee Tire and Rubber Corporation. A complete stock of belting, hose and packing will be carried in stock in a new Shook and Fletcher warehouse at Birmingham under the supervision of Fred V. Bailey, an engineer of wide experience in rubber.

## Standard Diesel Locomotives

In addition to its Diesel-Electric locomotives for special purposes, The Cooper-Bessemer Corporation, Mt. Vernon, Ohio, announces a complete line of eight standard Diesel locomotives for industrial and railway transportation service. These units range from single-engined, 65-ton switchers of 300 horsepower to twin-engined, 125-ton transfer locomotives of 1500 horsepower.

## **Develops Mass Selling Exhibit**

Develops Mass Selling Exhibit
At the recent Road Show in Cleveland,
Ohio, The Austin-Western Road Machinery
Company, Aurora, Ill., displayed its latest
product, the new Austin-Western No. 99
Grader, dramatized by a miniature actimotive exhibit which drives and steers on all
four wheels. Synchronized with a talking
record, the exhibit tells a dramatic story of
what the No. 99 Grader will do under actual
operating conditions. It is believed by educators, engineers and advertising men that
this type of exhibit will pave the way for
new methods of mass selling.

### Low Pressure Tires For Motor Graders

Pioneering in the use of large single low pressure tires on tandem drive motor graders, Caterpillar Tractor Company, Peoria, III., has adopted this type of tire as standard in its single drive No. 10 and Diesel No. 10 Auto Patrols. The tire was first shown at the recent Road Show at Cleveland, Ohio. Experiments covering a period of more than a year have been made with the single low pressure tires in order to develop a tire of proper size and to determine correct inflation for best performance.

## Acquires Interest in Moore Steam Turbine

Acquiring an interest in the Moore Steam Turbine Corporation of Wellsville, N. Y., the Worthington Pump and Machinery Corporation of Harrison, N. J., announces that it now adds to its list of Worthington sponsored products a line of steam turbine equipment "second to none." Moore products have been favorably received in many industries, including petroleum, chemical, public utility and shipbuilding, the policy of the company having been one of progressive development.

## Hercules Opens Oil Field Branch

Hercules Opens Oil Field Branch
The initial step in a program of sales and
service expansion in the mid-continent oil
field has been taken by Hercules Motors Corporation, Canton, Ohio, in the opening of a
branch store at Kilgore, Texas. This new
unit will be manned by Hercules-trained sales
engineers and service mechanics, carrying a
complete stock of engines, power units and
replacement parts for the entire Hercules
line embracing a wide variety of gasoline
and Diesel engines and power units. A. B.
Wehling, with headquarters at Houston, will
have charge of all mid-continent sales and
service activities.

(Continued on page 52)

## CRUSHED LIMESTONE Best for All Purposes

We manufacture all sizes of stone suitable for all classes of road building and concrete work where only a high-grade limestone is required.

Quarries opened up in 1912, Capacity 8000 tons daily.

Four Quarries

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W. W. BOXLEY & COMPANY

Room 711, Boxley Building, ROANOKE, VA.

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ROOFING GRAVEL CRUSHED STONE
ASPHALT FILLER DUST



American Limestone Co., Knoxville, Tenn.



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Washed Sand and Gravel for Concrete Roads and Buildings Filter Gravel, all sizes—Building Bricks

FRIEND & CO., INC. River St., Petersburg, Va.

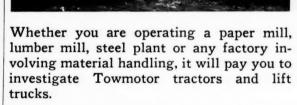


Built for more years of service— sizes for any diameter pipe from 12 to 84 inches—any length— tongue and groove or bell end.

Also manufacturers of concrete pipe machines for making pipe by machine process.

QUINN WIRE & IRON WORKS THE 12 St. Boone.lowa

# WMOTO



Towmotor equipment has been straight gas powered since 1919. Towmotors have a lower daily and weekly operating cost and they are built for endurance. If you are interested in better material handling equipment at a lower annual cost, as well as a lower cost per ton moved, then write for literature, specifications and prices today.

## TOWMOTOR COMPANY

1237 E. 152nd St., Cleveland, Ohio

## INDUSTRIAL NEWS

(Continued from page 50)

### 1938 Calendars

Calendars for 1938 coming to the office of the Manufacturers Record, subsequent to publication of the list in the January number, are from the following: The Cooper-Bessemer Corporation, Mount Vernon, Ohio, and Grove City, Pa., manufacturers of engines for 165 years; Eastern Air Lines, New York, N. Y.: Industrial Power Division, International Harvester Company, Inc., Chicago, Ill.; Committee on Public Relations of the Eastern Railroads, 143 Liberty Stret, New York, from data furnished by the Association of American Railroads and the Bureau of Railway Economics, Washington, D. C., Tuthill Spring Company, Chicago.

## Westinghouse Air Brake Promotes

Carl H. Beck, for six years Eastern Manager of Westinghouse Air Brake Company, has been promoted to the position of General Sales Manager with headquarters at the company's general office at Wilmerding, Pa. Mr. Beck has been connected with the Westinghouse Air Brake Company for more than thirty years.

## Frick Refrigeration for Dairy Plant

Scheduled for completion in the spring, a large combined milk plant and distributing station is being built on West 57th Street, New York, for the Sheffield Farms Company. Refrigerating load for the plant will be divided into four main parts—a capacity of 320 tons of refrigeration being required for cooling water to 34 degrees for use in the milk coolers, bottle washers, air conditioning equipment, and for ice-making. Sixty tons

will be used for cooling brine to 10 degrees Fahrenheit for the box coils and unit coolers in the storage rooms. Equipment for refrig-eration will be supplied by Frick Company, Inc., Waynesboro, Pa.

Gar Wood Streamlined Coach

Gar Wood Streamlined Coach
Gar Wood Industries, Inc., of Detroit,
Mich., is offering a new, streamlined motor
coach designed for de luxe passenger service,
according to H. Sydney Snodgrass, general
manager of the motor coach division. The new
rear-engined 1938 coach is designated Model
D, and is made in two standard types—the
transit or suburban type, seating 29 passengers, and the inter-city type, seating from 22
to 25 passengers. With the exception of the
seating arrangement, the types are similar in
general design and construction.

## TRADE LITERATURE

MIXERS— Catalogue—Koehring Dandie Mixers, illus-trated.

Kochring Company, Milwaukee, Wis.

"The Secretary's Book"—This is a volume of 358 pages with 90 illustrations, by J. S. Wanous, offering suggestions for the guid-ance of secretaries and giving practical anance of secretaries and giving practical answers to many questions facing secretaries in their daily work. It deals exhaustively with secretarial efficiency, interviews and telephoning, correct wording, letting writing, legal instruments; minutes, manuscripts and reports; filing, business practice, office mathematics, and other phases of secretarial work. The book is published by The Ronald Press, Company, 15 E. 26th Street, New York, and is priced at \$2.50.

LEIPZIG TRADE FAIRS—
Booklet—outlining some features of the coming engineering and building fair to be held at Leipzig, Germany, March 6 to 14, 1938, said to be the world's largest international machinery exhibition.

Leipzig Trade Fair, Inc., 19 East 40th Street, New York, N. Y.

FOOD LOCKERS, AIR CONDITIONING—
Bulletin No. 145—Knickerbocker Refrigerated Food Lockers;
Bulletin No. 206-A—Frick Low Pressure Compressors for Freon-12 or Methyl Chloride;
Bulletin No. 219-B—Frick Low Pressure Unit for Air Conditioning; Model FW-420FH;
Bulletin No. 200-38.

\*20FH; Bulletin No. 218-B—Frick Low Pressure Unit for Air Conditioning; Model FW-315FH; Bulletin No. 220-B—Frick Low Pressure Unit for Air Conditioning; Model FW-630FH.

Frick Company, Waynesboro, Pa.

CONTOUR MACHINING—
Handbook—revised and enlarged edition of an earlier handbook on contour machining sawing, filing, polishing.
Continental Machine Specialties, Inc., 1301-3-5 Washington Avenue, South, Minneapolis, Minn.

ELECTRIC FURNACE—
Booklet—"The Heroult Electric Furnace,"
illustrating and describing this modern
electric furnace for steel mills and foundries, the present series embodying the
latest electrical and mechanical equipment,
of rugged construction, dependable, efficient and suited for a wide range of uses.
American Bridge Company, Pittsburgh, Pa.

ROCK DRILLS— Catalogue No. 4201—covering rock drills and associated equipment, including jack-hammers, paving breakers, drifters, stope-bamers, wagon drills, jackbits, drill steel, sharpeners, furnaces, blacksmith equip-ment including jackrod threading devices, culyx and diamond drills, and accessories, Ingersoil-Rand, 11 Broadway, New York, X. Y.

WORLD ALMANAC—
The 53rd edition of the World Almanac has been issued. It is truly a book of "a million facts."

The value of its contents to executives and research workers is impossible to estimate. Information on almost every conceivable subject, from Populations to Politics, and from Aeronautical Engineering to Zoology fill its 550 pages. If the desire is to know what is important in Mozambique, or the election returns of Nevada, they are all between its covers.

covers.

Published by World-Telegram, New York City.



Asked for a proposal, P&H Engineers suggested a P&H XR-3½ ton Hoist with 1000 lb. capacity, operating on a monorail. Final figures, after installation was made, showed a saving of \$885.16, including original cost, depreciation, upkeep and

## HANDLE IT "Thru the Air" with P&H HOISTS

In just one simple item in this plant's operation, a P&H Hoist saved hundreds of dollars. It brought push-button simplicity and the economy of "thru the air" handling to an old job that was costly and tedious. A P&H Hoist may be the answer to YOUR handling problem—whether you operate a machine shop, ice plant, paper mill or any plant where material must be lifted, lowered and moved. Available in several mountaints with the problem in the plant where material must be lifted. ings, P&H Hoists are easy to buy, easy to install and pay for themselves in a short time.

### GET THE ENGINEERING LAYOUTS THAT SOLVED THIS PROBLEM! Send for the facts and detailed figures be-USE COUPON NOW! hind the above installation. This layout shows in black and white what "thru the air" handling meant to this plant's cost sheet. It will help you in modernizing Harnischfeger Corporation, 4427 W. National Avenue, Milwaukee, Wisconsin Please send me engineering layout No. 101 our handling system. Send for it today! Use the coupon now! Title. Bv.

Address

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heavy on the account sheet. Total storage

cost - \$1900.80 - NOT INCLUDING loss of time, or wear and tear on the workers.

## 60 YEARS OF WOOD-TREATING EXPERIENCE

are behind the service of Eppinger & Russell Co. Industrial and commercial lumber of all kinds is made immune to termites and dry rot by pressure-treating with ZMA or Creosote. Consult Eppinger & Russell Co. on your requirements in poles, posts. piling, cross ties, cross arms and other timber. It will add 8 to 20 times the natural life to any woods you have treated by this low-cost, dependable process.

PRESSURE-TREATING PLANTS AT: Jacksonville, Fla., and Long Island City, N. Y.

EPPINGER & RUSSELL CO

84 Eighth Ave., New York City

## **CONVERSE BRIDGE & STEEL CO.**

Chattanooga, Tennessee

Structural Steel for all Industrial Structures, Buildings and Bridges.

LARGE STOCK FOR IMMEDIATE SHIPMENT

## Bristol Steel & Iron Works, Inc. STRUCTURAL STEEL

For Bridges, Buildings and All Industrial Purposes
Steel Plate and Miscellaneous Iron Work
Complete Stock Shapes, Plates, Sheets and Bars for
Immediate Shipment

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Capacity 1000 Tons per Month. 3000 Tons in Stock

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Greenshoro

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Size means little to service, but twenty-five years in pleasing customers in Southern hotels, plus size, guarantees your satisfaction in these hotels.

## Dinkler Hotels

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Operating

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The St. Charles, New Orleans, La.
The O. Henry, Greensboro, N. C.
The Tutwiler, Birmingham, Ala.

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The paint goes on smooth and clean. It holds tenaciously, and of course no acid-etching or weathering is necessary. But an even more important advantage of Armco Paintenie is, it has a neutral surface film that preserves the vital oils in the paint, that keeps it flexible, that prevents it from cracking and peeling.

There is an Armco distributor nearby who will be glad to serve your needs for PAINTGRIP. Or, write us for information. The American Rolling Mill Company, Executive Offices: 111 Curtis Street, Middletown, Ohio.



## The Hardwood Forests of the Lower South

(Continued from page 29)

sawlog-size stands occupy 37 per cent; and that reproduction, that is, stands in the form of seedlings and sprouts under 1 inch in diameter, without an overstory of larger trees, occupies 4 per cent of the area. Owing to the ability of hardwood species to reproduce themselves by seed or by sprouting, it is not surprising that only 1 per cent of the area has failed to restock after cutting.

The volume of the total growing stock of hardwoods of sawtimber size in the Lower South, after allowance is made for defect and cull, adds up to 116 billion board feet, lumber tally, in which no trees under 13 inches in diameter outside the bark at breast height were included. The various species of oak make up about one third of the total volume of hardwood saw-timber; red gum, black gum, and tupelo gum make up another third; and the remaining third consists of a variety of species, including cypress, elm, ash, hickory, cottonwood, sycamore, magnolia, bay, etc. Notwithstanding that only 21 per cent of the hardwood area is occupied by original-growth stands, approximately one-half of the board-foot volume was found to be in old-growth stands, and the remaining half in second-growth stands. The following tabulation shows the sawtimber volume of hardwoods found by the survey in the several states and parts of states in the Lower South.

Hardwood (and cypress) sawtimber in Southern Survey Territory (Net lumber tally)

	Billion Board Feet
Alabama	13.2
Arkansas (¾ of state 1)	19.0
Florida	9.4
Georgia	13.5
Louisiana	27.0
Mississippi	19.8
Oklahoma (portion of state)	1.1
South Carolina (1/3 of state)	3.6
Texas (portion of state)	10.1
	-

Total (billion board feet) 116.7

In addition to the volume in sawlogsize trees, the Forest Survey found 300 million cords (net) of wood in sound hardwood trees between 5.0 inches and 12.9 inches d.b.h., as well as a considerable volume of sound cordwood material in cull trees and in the top stems and larger limbs of sawtimber trees.

At first glance, this inventory of over 116 billion board feet of hardwood sawtimber and 300 million cords of wood in smaller trees is impressive, but it must be remembered that these totals represent the entire growing stock of hardwood

timber in the vast stretch of country in the Lower South-a gross area (nonforest land included) of around 213 million acres-and that while all of the material shown is sound and physically suitable for manufacture into one commodity or another, a considerable portion of it is in trees of such size or character that their utilization at this time and under prevailing industrial requirements would be unprofitable. Unlike the pines, which are "general-utility" woods, the hardwoods may be called "specialty" woods; their manufacture and sale is hedged about by many strict specifications and requirements, in which color. texture, pattern of grain, density, and weight all have a part. Thus it appears that while the total volume of hardwoods in the region is large, only a part of this volume has the special qualifications now demanded.

The current industrial utilization of hardwoods is largely confined to the highgrade material found principally in large original-growth trees. The number of extensive blocks of such timber is dwindling rapidly, and industrial lumber operators are finding it increasingly difficult to locate sizable bodies of virgin timber. The day has passed when a mill could clean up one supply of virgin timber and move to an equally good new location. While the growing use of trucks and the combing over of small tracts and partially cut lands will tend to prolong the output of industrial lumber in some sections, many operators must look to the intensive management of their second-growth stands to keep them in business in the future.

There is a growing appreciation that hardwood consumers must adjust and broaden their requirements to meet the changing character of the supply, and many industrial lumber mills are beginning to find outlets for grades and kinds of lumber that a few years ago were unsalable. Second-growth hardwood stands in the South will in time supply large quantities of merchantable lumber. The length of time that must elapse before this will happen will depend upon two things: (1) the extent to which the industrial requirements are broadened and liberalized: and (2) the extent to which the needed technique in protecting, tending, and harvesting the second-growth stands is generally applied.

Contrary to the general thought, our second-growth hardwoods are growing rapidly and compare favorably with the pines in this respect. This is due, in part at least, to the fact that most of our hardwood forest types occupy the most fertile of our forest soils. In the Delta Region of northeast Louisiana, for example, the survey found that the average hardwood tree increases its diameter by the addition of 2 inches of new wood in 10 years; the average diameter increases over a 10-year period range in different species and

forest conditions from 1.4 inches to as much as 4.3 inches. These figures are based upon thousands of measurements made by the Survey cruisers on  $2\frac{1}{2}$  million acres of forest land and show, not the exceptional growth of individual trees often optimistically set up as a measure, but run-of-the-woods averages of the better and poorer stands combined. The computation of similar data has not been completed for all survey units, but it is believed that the growth of hardwoods on similar sites elsewhere in the Lower South may compare favorably with the growth in the Delta.

Our study of the increment-versusdrain situation has not as yet cov-ered the whole of the Lower South, but we have found a number of Sur vey units in which the annual increment, so far as hardwoods are concerned. considerably erned, considerably exceeds the resent annual industrial drain. It is too early yet to forecast what the final showing will be, should we find that increment equals or exceeds annual drain in the whole region, the problem of sustained yield is not altogether solved for the simple reason that the industrial drain is mainly concentrated in old-growth trees, while the greater part of the increment is being laid on young, small trees. In other words, we are not getting the growth in immediately salable form. If the annual cut of hard-woods could be distributed more equitably among all sizes, age classes, and species of hardwoods, however, the situation would take on a different and brighter complexion.

This leads very logically to the thought that an offset to a possible decline in the industries dependent upon high-grade material might be provided through the greater development of industries that would use and market the low-quality products of the forest while the highquality material is growing to maturity. Our second-growth stands today contain many million cords of sound material, in both sound and cull trees, the removal of which would benefit materially the remaining stands and improve their growth and quality. Much of this material is in trees that if left to the action of nature will never reach sawtimber size and quality but will lose out in the battle for existence, die, and rot in the woods. If the pulp and paper industry in the South could shift a part of its wood requirements to such low-valued hardwood material, the movement would brighten the situation for hardwoods.

The field for intensive management of our southern hardwoods is wide open, and the opportunities offered are so promising that they invite the fullest consideration. The development and full use of any natural resource that forms so large a part of our national economic structure as do our southern hardwoods demands our keenest attention.

<sup>&</sup>lt;sup>1</sup> Area surveyed includes areas of Delta bottomland in Missouri, Tennessee, and Kentucky.

## The Arundel Corporation BALTIMORE, MD.

Constructors and Engineers
Distributors of Sand-Gravel-Commercial Slag

## A COMPLETE ORGANIZATION

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## Discussion of Wage, Hour, and Farm Control

(Continued from page 32)

the natural course of events, bring about the desired result of cutting our cotton acreage. This doesn't wreck the farmer because it requires fewer man hours to raise the other crops, but it does turn negro families onto the roads of the cotton region. The thing is widespread enough so they can't take up cotton farming on a nearby farm. The Government's attempt to set up negroes as independent, rehabilitated farmers, who must compete in cotton raising using oxen and carts, is a cruel joke. The final result is that they go to town.

All of this is very desirable as the farmer turns to dairying and necessarily to the growing of more alfalfa and other grasses and grains, to raising poultry, to growing fruits and vegetables. As he turns to these other crops there is available in the South more food. I think it can be said fairly that the South, in common with the whole nation, needs more food, particularly more diversified food. The negro, if he goes to town, still needs something to eat; the farm without him produces more food than it did before. The problem is to put the negro, and the whites too, in a position to participate in the larger supply of food.

The question remains of how to put the negro in a position to get a square meal after he has gone to town. At the present time, it is too frequently necessary for him to go on some form of dole or charity; surely this doesn't get anybody anywhere, especially the negro. Notwithstanding the fact that many members of the negro race, above average in intelligence and energy, have won a place in industry and elsewhere, the average Southern negro is not temperamentally fitted for hard or steady work. To what extent, in the course of time, his capacity for skilled employment can be greatly improved is a matter of opinion. Certain it is, however, that at this time the things he can do in town and the measure in which he can do them are worth to society only very low wages indeed. To think, therefore, that he can be paid high wages is to think without giving any consideration to facts: is to allow pity and other worthy emotional manifestations to chart a disastrous course instead of being guided by inescapable realities.

What the South needs is a balance between Industry, a place for the unneeded cotton worker to earn a living, and Agriculture, the place from which the unneeded worker should be allowed to retire. This must be well recognized by the conference of Southern Governors who have been working to this end so diligently in recent months. Why should we not, therefore, give the Southern people at least an opportunity to bring about a balance between Industry and Agriculture by developing Industry while economic pressure is forcing a diversification of agriculture. Why, indeed, should we not go even further and instead of subsidizing a continuation of cotton (the disease), subsidize rather industry (the cure). If we do not care to go so far as to subsidize Industry, should we not at least allow the South to remain free under State laws to pay what the industrial labor available to Industry in the South is worth?

None but the uninformed can think that a Southern cotton negro can now, or at any early future time, go into town and, in Industry, be worth as much as the average Northern industrial worker. He cannot we worth it to Industry because he is not worth it to the customer, who must supply the money to operate Industry. If the customer, by his purchases, indicates an unwillingness to pay unduly high labor costs, there is no way for Industry to pay. It is altogether likely that the customer gets no more for his money when he invests it in Southern labor through patronage of Southern industry at the low wage rates that have prevailed in the South in the past, than he does when he invests it in the labor of a Northern industrial worker at the comparatively high rates that currently obtain in the North, Nordoes this involve any hardship to the South. Even at low wages, the negro's lot is greatly improved. A job for him at a low wage-a fair wage for what he is capable of earning-is infinitely better than no job at a high wage.

There can be no long-time alternative to the proposition that each of us must sell his service to the public at no more than the public considers it worth in comparison with the service of others. Retarding the continual adjustment of these values by means of legislation or otherwise must result in injury to all concerned. There can be no satisfactory solution to the well-being of the South except the development of a balance between Southern Industry and Agriculture. If we would simply forget all about subsidizing either cotton growing or Industry, and if we should forget federal regulation of hours and wages, the South would evolve its own balance and work out its own salvation more quickly and equitably, than if we shackle them.

In closing, notice how artificially enforced cotton reduction would tend to unduly raise cotton prices, how artificially established high wage rates and limited work hours would raise the cost of cotton products, thus raising the price to the public, reducing consumption, hurting the customer and reducing the income of both farmer and mill hand.

This resulting price increase and the other results of these twin legislative proposals might well make the adjustment of cotton acreage to the needs of a free market no longer sufficient.

Never forget Thomas Jefferson. Some of the things he did and said have been time-tested and found to be right. They could well be used as a gauge in inspecting the proposals of present day Social Doctors. He said:

"Were we directed from Washington when to sow and when to reap, we should soon want bread."

As for some of the questions that I have raised, may I point out that—

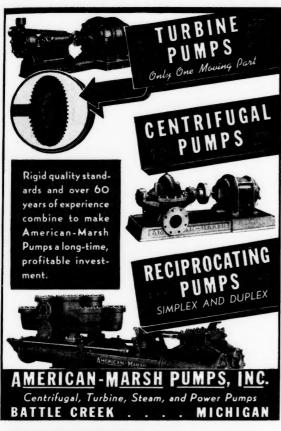
- 1. Workers capable of earning higher than local wages, gravitate to higher wage districts. From whence came Detroit?
- The reasons why it is unsound and undesirable to subsidize cotton are equally applicable to wheat and other erops
- 3. There are plenty of opportunities now being overlooked or neglected for Congress and the President to grasp in advancing our welfare, without doing damage or accomplishing little by activities which interfere with citizens' endeavors, and in helping to encourage further desirable increases in the volume of goods and services which our citizens wish to exchange among themselves.

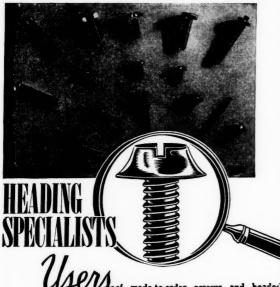
Those who have proposed great plans for our advancement condemn their critics for not presenting an equally great alternative. May I say in reply that a great Statesman and an astute Business Man, Benjamin Franklin, with the aid of his associates, gave us an alternate plan to government control. It was a free people acting under proper limitation of general laws. That plan has wrought miracles. It works slowly, to be sure, and that is apparently the chief objection to it on the part of reformers who by nature are impatient. Thus we have now a dual demand for patiencepatience with the normal slow but sure functioning of natural economic laws and patience with those whose impatience prompts their present actions.

## Notice to Exporters

The U. S. Bureau of Foreign and Domestic Commerce calls the attention of exporters to Schedule B, Statistical Classification of Domestic Commodities Exported from the United States, which went into effect as of January 1, 1938.

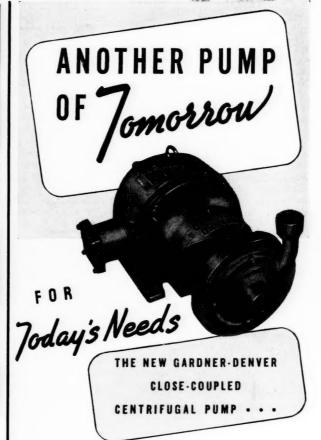
This revised edition is now available together with Regulations Governing Statistical Returns of Exports of Domestic Commodities, and exporters are urged to secure copies from the Superintendent of Documents, Washington, D. C., or from any of the District Offices of the Department of Commerce in order to avoid unnecessary delay and expense.





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GARDNER-DENVER

FEBRUARY NINETEEN THIRTY-EIGHT

## Paper Mill and Other Activities Bring New Life to Port St. Joe

(Continued from page 35)

400 tons of kraft paper daily. The City has installed a modern water and sewer system at a cost of \$500,000; new churches, schools, business houses and homes have been constructed, with more at present under construction. The railroad is spending thousands of dollars in improving road bed, rolling stock and equipment; a new telephone system is being installed; a modern theatre is under construction. Port St. Joe now presents a bustling, busy city, boasting of 3,500 inhabitants. Its growth is apparent on

every side. Its citizens are enthusiastic supporters but have trouble in keeping up with the daily change in its rapid growth.

## Remodeling a Power Plant

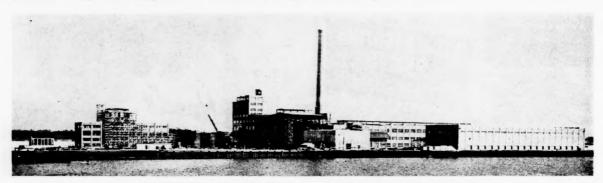
(Continued from page 39)

Grates are made up of comparatively small sections. Multiples of these grates are combined to form required widths and lengths. Small openings are provided at these close intervals. Siftings through the grate are very slight. Under operation, each hole becomes a small jet through which air penetrates the fuel bed. The under-grate fan furnishes the main air supply for combustion. It is a low-pressure type fan with a wide double inlet. Owing to its design and its high efficiency and owing also to the low pres-

sure required for the shallow fuel beds, the power consumption is low.

After the Kearney plant had been reconstructed, thorough tests were made by an independent engineering organization to determine the performance as regards efficiency of operation and capacity available.

Particular note should be made of the fact that the coal contained 13.43% ash, 2.72% sulphur and 4.65% hydrogen. The performance of the boilers under A. S. M. E. tests, showed they operated at 143% rating and generated 12,590 pounds of steam per hour at 74.3% over-all net efficiency. In addition, it should be noted that in these tests the boiler was used without extended heat-absorbing surfaces.



View of the pulp and paper plant at Port St. Joe taken from the Harbor

## STERLING CONTRIBUTES TO PROGRESS!

Twenty-one 8-cylinder Sterling engines, rated 300 horsepower, (400 H.P. under overload), are in continuous service for a major oil company—on pipe line pumps and generator sets. These engines operate at 900 R.P.M., loaded frequently to over 320 H.P. All units have operated thousands of hours, without stopping for valve grinding or other service attention usually required for engines not so constructed. Previously, similar engines had been in service for four years, with a fine record for continuity and low maintenance—warranting this giant order. These engines are now establishing new records.

Sterling High Duty

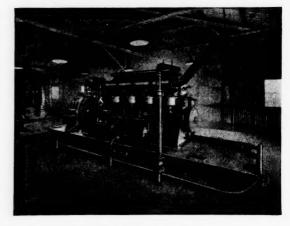


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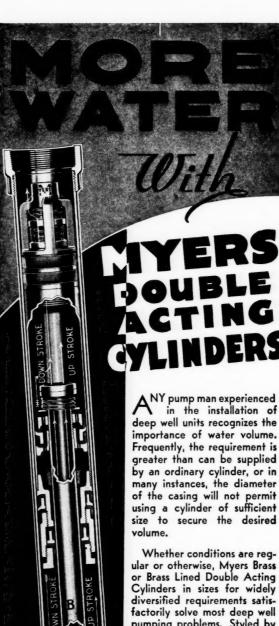
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ASHLAND, OHIO

PUMPS-WATER SYSTEMS-HAY TOOLS-DOOR HANGERS

## Republic Steel Spends \$2,000,000 in Alabama

(Continued from page 33)

hearth was done by a crawler shovel and locomotive crane with bucket. Foundations for the checker chambers rest upon solid shale, while the concrete walls surrounding the checker chambers as well as the flues going to the stack were processed to form a watertight wall. Stacks on the furnaces will be of welded steel 200 feet high and with an inside diameter of seven feet.

There is probably no steel district so independent of outside sources of supply as that at Birmingham. All the ingredients required for manufacture of iron and steel are found nearby—self-fluxing ores of fairly high iron content, coals of varying analysis, and limestone and dolomite of good quality.

Republic at present operates coal and various ore mines, a by-product coke plant, a sintering plant, and several blast furnaces in the Birmingham area. At Gadsden are located the blast furnaces, by-product coke ovens, open hearth furnaces, blooming mill, sheet mill, rod mill, bar mills and wire drawing mill. Iron ore is obtained from the Raimund and

Spaulding Mines, and coal from the Sayreton mines. All are convenient to both Birmingham and Gadsden. Limestone is brought from the Company's quarries at Cobbs City where stone for either open hearth or blast furnace is available.

The plate mill has a capacity of 197,000 tons per year and is built for interchangeable operation, producing either sheared or universal plate. The sheet mill whose capacity is 79,000 tons yearly, includes among its products black, blue annealed and galvanized sheets, and galvanized roofing including corrugated, V-crimped and rolled roofing, and roofing trim materials. Output of the bar mill is 30 to 35 tons per hour. All shapes are rolled, including flats, rounds, angles, squares, half rounds, and concrete bars.

The acquisition last spring of the Gulf States Steel Co., by Republic Steel Corp., resulted in a merger of Republic's mines and furnaces at Birmingham with Gulf States' steel-making facilities which are now being expanded at Gadsden. Among the prinicpal items of production are—pig iron for use in foundries, merchant and concrete bars, plates, sheets including galvanized sheets and roofing, and a wide variety of wire products such as barbed wire, fencing and nails.

## Electric Equipment for Materials Handling

(Continued from page 38)

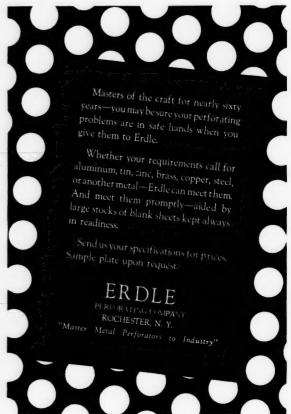
stations, the ore is excavated by means of electric shovels. Two interesting sidelights on this installation lie in the fact the conveyor, from the point at which it appears above the ground to the receiving pocket, is completely enclosed in a steel gallery; and the motors are equipped with electric heating units to prevent possible damage from moisture should the installation be shut down temporarily.

## Fast Mine Hoist

The constructon of electric equipment for the largest and probably the fastest a-c mine hoist in America is at present under way at the Wenonah No. 9 mine of the Tennessee Coal, Iron & Railroad Company.

More than 6,000 feet of wire rope will be wound around the 18 foot drum in hoisting the unbalanced load of 50,800 pounds. This enormous load will travel up the steep slope at a speed of 3,600 feet per minute, or approximately 41 miles an hour. Only ten seconds will be consumed in loading or unloading the car. Dynamic braking will be used to control the speed when lowering. The resistor alone will weigh about 30,000 pounds.





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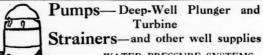
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FEBRUARY NINETEEN THIRTY-EIGHT

## The State of Politics as Seen by the Business Man

BY

J. H. Allen

POLITICAL power and economic power, even when coordinated, are not sufficient within themselves to regulate successfully our national affairs.

Today it seems the politician runs counter to the soul of philosophy and metaphysics—for class fights class; labor is divided against itself; charges are heard that plutocratic days are here again and that sixty families have become a composite god that controls the present day life of 130,000,000 persons; thrifty persons and corporations are being penalized for saving. Government is gaudily generous without being just. More billions of dollars are to be given jobs through borrowings while millions of men remain idle-not even caring for themselves. Industry has been told to stabilize itself, and when attempts to stabilize are made, the prominent leaders in stabilization are indicted and convicted as criminals. Economic power and political power are in a fearful war of hate, each in the neglect of its own affairs trying to attend to the affairs of the other.

Mr. Roosevelt, I feel, desires to place his people into his own political experimental laboratory, hoping the results of one hundred experiments will warrant him to say, "I have come along with my planned Democracy and have made it work"

Roosevelt, the politician, and Roosevelt, the man, are two quite different individuals. It has been seemingly impossible for anyone to ascend to great political power in this country without political stage rigging. Mr. Roosevelt has been a past master in having his stages arranged for him. It would seem, as Mr. Roosevelt, the man, realizes, that the \$25,000,000,000 political and economic prime is about to be lost; and as he realizes that even the house of labor is divided against itself: as he sees the income of the farmers declining toward the 1932 level; as he sees the industrial payroll going down; that he would shake off his political toggery and enter the stretch of historic race as Roosevelt, the cultured, courageous, powerful man of science. If he should do this, that courage which he possesses, plus his ceaseless creative mind, will cause him to seek equity between all warring groups, and will cause him to desert political expediency. He will be just to all before being generous to any.

He will stop trying to change the natural regional competitive economy factors by wage scale rule of thumb measurements. He will stop interfering with state rights, county rights, city rights, or the home rights of the individual, for he must realize that all of these rights are sacred even though at times they are abused.

There is no need for him to fail, for the seeks the coordination of his political power with those controlling economic power, with labor, and with the farmers, he will find them rushing into his equitable plan—for these groups all have a common road to travel.

## Richmond's Water Supply

The occasional suggestions that Richmond, Va., seek a new source of water supply would appear to be without justification according to Allen J. Saville, Richmond engineer, who, with Malcolm Pirnie, New York water consultant, has recently completed an extensive examination into the city's water. Not only has Richmond an ample supply of water, but its purification plant is up to standard and the engineers in charge are recognized as nationally competent men who have introduced methods that have been adopted in other parts of the country.

Reviewing the present situation as the result of proposals that Richmond take its future water supply from the Willis and Slate rivers or the North Anna river or else install anti-pollution measures in the James river, Mr. Saville said, "Prior to 1910 the City of Richmond pumped raw James river water into its reservoir and used it as a source of supply. first step in improvement was taken after long discussion and consideration, when the settling basin was built. Under this method, water at the muddy seasons was held for a sufficient length of time to let the major portion of the mud settle out. The water was still however, murky at times. About 1922 or 1923, another big improvement was made in the installa-tion of the modern filters. These filters run the water through sand beds and not only clarify it at all stages of the river, but in addition, make a material reduction in the bacteria in the water. In order to purify the water completely, it is then treated with chlorine.'

Stating that since the installation of (Continued on page 70)

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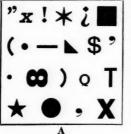
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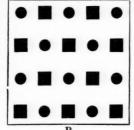
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The HIGHLAND PINES INN offers unsurpassed hospitality in a charming Southern atmosphere among congenial people; giving mental stimulation and physical refreshment outdoors from the bracing, pine-laden air and warm sunshine.

Rain or showers seldom interfere with continuous outdoor life as the sandy soil promptly absorbs all moisture and the pine trees drink in whatever may remain in the air.

Southern Pines is only 9 hours from Washington; 13 hours from New York; 20 hours from Boston and only halfway between New York and Florida on the main line of the S. A. L. Ry. with through Pullman service. On U. S. Highway number one—For rates and reservations write or wire M. H. Turner, Manager.

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## A Pleasant Relationship

In the confusion of present day problems, increased by the labor unrest in some sections, it is refreshing to read of events which reveal that all is not discord between employer and employee. Years of service, faithfulness to ideals of craftsmenship and salesmanship are not disregarded, but are estimated oftentimes for their real value and indispensability in the minds of employers who recognize the part that singlemindedness of purpose plays in the success of any business.

An illustration of this was afforded recently at the establishment of Lyon, Conklin & Co., Inc., of Baltimore, whose history of success dates back to 1860. In a letter from that firm they tell of a banquet that was tendered to their employees and their affiliate companies at their plant. Honored guests were Samuel Jones of Carnegie-Illinois Steel Corporation, Wallace T. McCall of the Barber Company, and Carl Emery of the Emery Advertising Company.

Mr. Robert H. Lyon, Vice-president, who presided, referred to the background of the company which was founded by his father, Wm. L. Lyon, 77 years ago.

Among the employees present, the letter states, "was one who has given service for 55 years." Those of us of an earlier generation recall instances of 50, 55 and 60 years of service, but they are unusual now when changes are frequent and varied. The turnover in labor is an acute problem of management today. The man of 55 years of service puts all that he has into the making of a product that must maintain its excellence to claim his interest and devotion. Undoubtedly it has its effect in the quality of that product.

Service buttons and pins were given employees with the company from five to 55 years. Those employed five years received a bronze button for men, while the especially honored guest, Andrew Snyder, Superintendent of the factory, who served for 55 years, received a gold button embellished with diamonds.

## Pulp and Paper Industry of North Carolina

(Continued from page 28)

in the state are giving whole-hearted cooperation to this effort since they are as vitally interested in assuring a future supply of pulpwood as is the Department of Conservation.

Evidence that the better forest management campaign being conducted by the Forestry Division is already getting results is attested by the fact that the division is going to more than double the output of its forest nursery this spring to meet the supply for seedlings. Between 2,500,000 and 3,000,000 seedlings were grown in the nursery last year. Orders have already been received for more than the number of seedlings grown and approximately 1,500,000 of these have already been dug and shipped. The capacity of the nursery will be increased to 6.-000,000 seedlings this year, while an additional nursery will probably be established in the western part of the state.

Concern has been felt among some in

North Carolina that more pulp companies might locate in the state than its resources in pulp timber might warrant. But with at least 14,000,000 acres in pine forests, and with at least 1,000,000 acres capable of reforestation with pine, which could begin yielding pulpwood in from 12 to 15 years, most foresters and engineers believe that North Carolina can supply the pulpwood for a good many more

plants than are now operating here, especially if proper forestry methods are used in the cutting of this timber.

The present combined requirements of all the pulp plants in the south are estimated at approximately 3,000,000 cords of pulpwood per year. Conservative estimates are that one acre of pine should

(Continued on page 70)



The North Carolina Pulp Co., plant at Plymouth, N. C.

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Five years ago, York Ice Machinery Corporation of York, Penna., pioneered the first complete self-contained air-conditioner. It combined in a single cabinet all necessary elements for both summer and winter airconditioning.

Since then, the demand for York air-conditioning units has so grown that it was necessary for the plant to undergo a complete change.

The old unit required a floor space of 10 square feet. This unit has been redesigned and streamlined, taking only about half the floor space and at a much lower

Walter Dorwin Teague, industrial designer, has styled Yorkaire portable units to harmonize with modern architectural and decorative interiors, making it a distinctive part of the equipment of any room.

The units are so packed for shipment at the factory that they can be quickly set up and put into operation after making the electrical, water and drain connec-

At its conference and exposition held at York, January 11 to 13th, there were 324 representatives from 40 states, and new manufacturing plans were explained and sales plans launched. It was explained that the production operations of the plant and sales organization are now tuned to modern needs and demands for air-cooling and conditioning for domestic uses,



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